ABSTRACT

EDUCATIONAL LEADERSHIP

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STUDENT PERFORMANCE IN MATH IN RELATION TO LANGUAGE DEFICIENCY AND OTHER VARIABLES: IMPLICATIONS FOR SCHOOL ADMINISTRATORS

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The purpose of this study is to examine the extent to which student achievement in mathematics is impacted by early language deficiencies and other variables and if it can be improved when controlling these variables. Student achievement in the area of mathematics was identified as an area of problem at Urban Academy Elementary school and the greater Urban Public Schools District (UPS). The researcher wanted to explore specific strategies that could lead to improved student performance in the area of mathematics. The researcher proposed that the possible causal factors that yield an outcome of low student achievement in math were prior language development, socioeconomic status, leadership, teacher methodology, student efficacy/engagement, professional development, and parental involvement

The researcher used instrumentation methods to gather information from parents, teachers and students in order to examine if there was a relationship between student

achievement in mathematics and the referenced variables: prior language development, socio economic status, leadership, instructional practices, student efficacy, professional development, and parental involvement. A treatment was developed and implemented during the 2008-2009 school year (see Appendix A) based on the perceived impacting variables. The 2009 Criterion Referenced Competency Test was used as a posttest to determine if the treatment had a significant impact on student achievement. Additionally, a district wide benchmark assessment was administered during the months of September 2008 and February 2009 to monitor student achievement growth prior to the CRCT.

The researcher found that there were significant relationships between the dependent variable, student achievement, and leadership, teacher professional development, and the winter benchmark assessment that is administered annually as a predictor of performance on the Criterion Referenced Competency Test. The results suggests that the treatment practices that considered fine-tuning teacher instructional practices by providing professional development gives explanation as to why the treatment was successful. The results substantiate how purposeful professional development for teachers can have an impact on student achievement. It was recommended that planned professional development be arranged and offered to teachers along with a student benchmark assessment that is similar in content, content weights, and item number as the state's standardized test administered prior to formal testing.

STUDENT PERFORMANCE IN MATH IN RELATION TO LANGUAGE DEFICIENCY AND OTHER VARIABLES: IMPLICATIONS FOR SCHOOL ADMINISTRATORS

A DISSERTATION

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TABLE OF CONTENTS

PAGE

Table of Contents (continued)

Table of Contents (continued)

PAGE

LIST OF FIGURES

PAGE

FIGURE

LIST OF TABLES

PAGE

TABLE

List of Tables (continued)

PAGE

TABLE

CHAPTER I

INTRODUCTION

This study focuses on the relevance of language development and other variables' impact on student achievement in mathematics. The intent of this investigation is to find out what the possible causal factors are for low achievement in the area of mathematics. The researcher looks at prior language development, socioeconomic status, leadership, teacher instructional practices, student efficacy, professional development of teachers, and parental involvement as possible causes. A breakdown of the current academic achievement rate within the school system and school studied is included and shows an increase in the failure rate of students in the area of math as they progress in grade level. As indicated in the study, there are several math programs and initiatives used as a measure to help combat the failure, but none are yielding the desired achievement level of 100% of the students making academic gains showing satisfactory grade level mastery.

A specific elementary school is used in this study to conduct a more comprehensive investigation. Two grade levels, third and fourth, are targeted because the data reveals that the failure rate in mathematics significantly increases at these elementary level grades. The students used in the study are 100% African-American with a poverty index of 69% free and reduced lunch eligibility. The study conducted includes the collection of surveys, the implementation of a specific treatment, and the use of comparative data of the Urban Pubic Schools District Benchmark Assessment, and the

2009 Criterion Referenced Competency Test (CRCT) results as the academic progress measure for treatment.

To protect the anonymity of the actual school district and elementary school used in this study, the names of the school district, Urban Public Schools District (UPS) and of the school, Urban Academy, are fictitious. This study ascertains whether or not specific variables cause failure in mathematics within this school and district and if a specific treatment that is developed based on the variables investigated can counteract the failure.

Student Achievement in Mathematics as a Problem

In review of the data collected from the Urban Public School's Research, Planning and Accountability (RPA) Department, mathematics continues to be an area of concern across the district. The data from 2000 through 2008 consistently show small student achievement gains in mathematics throughout the school system. Although improvement is occurring, progression is slow. From elementary to high school, students have performed at minimal levels in mathematics. A closer look at the UPS data reveals an overall drop in performance as students matriculate to the higher grade levels.

The data in Table1 show the results of the Criterion Referenced Competency Test taken in April 2004 through 2008 in grades 1-8 within Urban Public Schools. The percentage of students meeting and exceeding grade level standards diminished as the grade level increased with few exceptions each year. While the Quality Core Curriculum was being implemented in the state of Georgia, there was a slow but steady increase in the percentage of students meeting or exceeding grade level expectations in math in all grades.

Table 1

Percentage of Students Meeting and or Exceeding Grade Level Standards on the Georgia Criterion Referenced Competency Test within the Urban Public Schools District

Grade Level	Spring 2004	Spring 2005	Spring 2006	Spring 2007	Spring 2008
1	88	89	90	80	85
2	81	85	84	78	81
3	78	82	85	87	67
4	69	70	71	75	68
5	74	77	85	85	72
6	54	57	44	69	58
7	55	59	67	57	71
8	53	49	60	69	50

During the 2007-2008 school year, the Georgia Performance Standards (GPS) were implemented and assessed. The 2008 Criterion Referenced Competency test results showed a decrease in passing percentages at the third, fourth and fifth grade levels. The seventh grade level showed a slight increase in performance in 2008 as their math curriculum change occurred the year prior. The seventh grade students showed a decline in performance during the initial year of rolling out the GPS in 2006-2007.

When comparing the overall data of Urban Public Schools to that of Urban Academy, similar results were seen. The percentages of students meeting or exceeding

standards on the Criterion Referenced Competency Test for Urban Academy since its opening in 2004 through 2008 are shown in Table 2.

Table 2

Percentage of Students Meeting or Exceeding State Standards in Mathematics on the Criterion Referenced Competency Tests at Urban Academy

Grade Level	Spring 2004-2005	Spring 2005-2006	Spring 2006-2007	Spring 2007-2008
1	92	90	72	86
2	84	82	80	82
3	92	78	87	54
4	50	54	66	53
5	58	74	79	61

Similar to the district's results from year to year, as the grade level increases, the percentage of the students meeting or exceeding state standards decreases. During the 2007-2008 school year, a significant decline in performance is noted at the third, fourth, and fifth grade levels with the introduction of the new Georgia Performance Standards. The expectation of content mastery changed during this school year with students having less basic computation problems to solve and more problem solving based on conceptualization involving two and three steps, data analysis/reasoning, and strong command of language/vocabulary and appropriate math tools. As the exam changed, the percentage of student failure in the area of mathematics increased.

It is with urgency that variables at Urban Academy be investigated to determine what could be causing student failure in mathematics. Immediate change is needed in order to improve student performance. There are different variables that could be impacting math achievement. This study assumes that language development, socioeconomic status, leadership, teacher instructional practices, professional development, parent involvement, and student efficacy are causal factors for low achievement in mathematics at Urban Academy.

Current Programs to Solve Math Achievement Problem

Data indicates that there are a few pockets of schools that show academic gains at the elementary level. The middle schools continue to produce a low number of students meeting or exceeding academic standards in math. Quick fixes such as adoptions of reform models are put in place and short-term academic improvement results. Improvement overtime has not been sustained. Programs such as

- *Reform Model—Project Grad Math* with math coaches and facilitators provide diagnostic and prescriptive information through skills mastery quizzes. It makes claims of being researched based and emphasizes professional development for teachers, differentiated instruction, use of manipulatives, and a systematic approach to teaching mathematics using an inquiry based model.
- *Lightspan*: An internet based program that allows for additional practice with mathematics through game play.

- *UPS Math* Initiative: On-going professional development with a focus on appropriate instructional practices that informs teachers on how to differentiate instruction in the classroom.
- *Extended Day*: Additional opportunity for students to participate in mathematics instruction beyond the regular school day.
- *Wednesday Tutorial* Sessions: Additional opportunity for students to participate in mathematics instructions for remediation and/or intervention.

Purpose of the Study

The purpose of this study is to examine the extent to which student achievement in mathematics is impacted by early language deficiencies and other variables and if it can be improved when controlling these variables. There is a need within the Urban Public Schools District for educational researchers to explore specific strategies that will lead to improved student performance in the area of mathematics. If the findings yield significant academic gains, the strategies can be duplicated to support other schools inside and outside of the Urban Public Schools district.

Research Questions

The current programs are not yielding the desired achievement gains. The quick fix promises of many of the reform initiatives are not counteracting the possible causes for the continued failure. As indicated in Tables 1 and 2, each year the Criterion Referenced Competency Test shows similar performance data, increase in the percentage of students not meeting grade level expectations as the grade levels progress. Several questions are raised as it pertains to why students within Urban Public Schools,

specifically at Urban Academy, perform at low levels in the area of mathematics. These questions include:

RQ1: Is there a relationship between prior language development and student achievement?

RQ2: Is there a relationship between socioeconomic status and student achievement?

RQ3: Is there a relationship between leadership and student achievement?

RQ4: Is there a relationship between teacher instructional practices and student achievement?

RQ5: Is there a relationship between student efficacy and student achievement? achievement?

RQ6: Is there a relationship between parental involvement and student achievement?

RQ7: Is there a relationship between professional development and student achievement?

These questions are addressed in this study with a determination of the significance of each variable on student achievement in mathematics.

Significance of the Study

The results of this study could benefit the Urban Public Schools District principals by informing them of specific teaching strategies that should be implemented daily to improve student achievement in math. The Urban Public Schools' student achievement goal is to have 100% of the schools to meet or exceed at least 70% of their annual growth

targets while closing the achievement gap. By arming teachers with specific strategies that guarantee student success, the district's goal would be more easily attainable.

Currently, the Urban Public Schools System is focusing on math across the district because of the low academic achievement rate in this area. School principals have been asked to analyze the data specific to their schools and to implement initiatives that will combat the significant rate of failure. Many schools have adopted a math component of the reform model, Success for All, called Move It Math. Several others have redefined their approach to teaching math. This study reviewed what teachers are doing currently to positively impact learning and if progress is made with the adoption of identified variables that are considered to be strategies that yield student achievement in mathematics.

Student achievement might be effected by the quality of supervision both within the school and outside of the school. Figure 1 shows the school system's authority and the relationship between school and the Urban Board of Education, Superintendent, Deputy Superintendent, Area Executive Directors, Principals, Assistant Principals, teachers, parents and students.

The bureaucracy flow begins with the Urban Board of Education and continues downward to the student (S1-SN). The flow extends upward from the parents (P1-PN) to the students and back up to the school board. Student achievement in math could be effected by the decisions that the school board is making based on their beliefs, assumptions and/or the pressures from the public. It could be affected by the programs and protocols that the Superintendent may be establishing with or without having direct

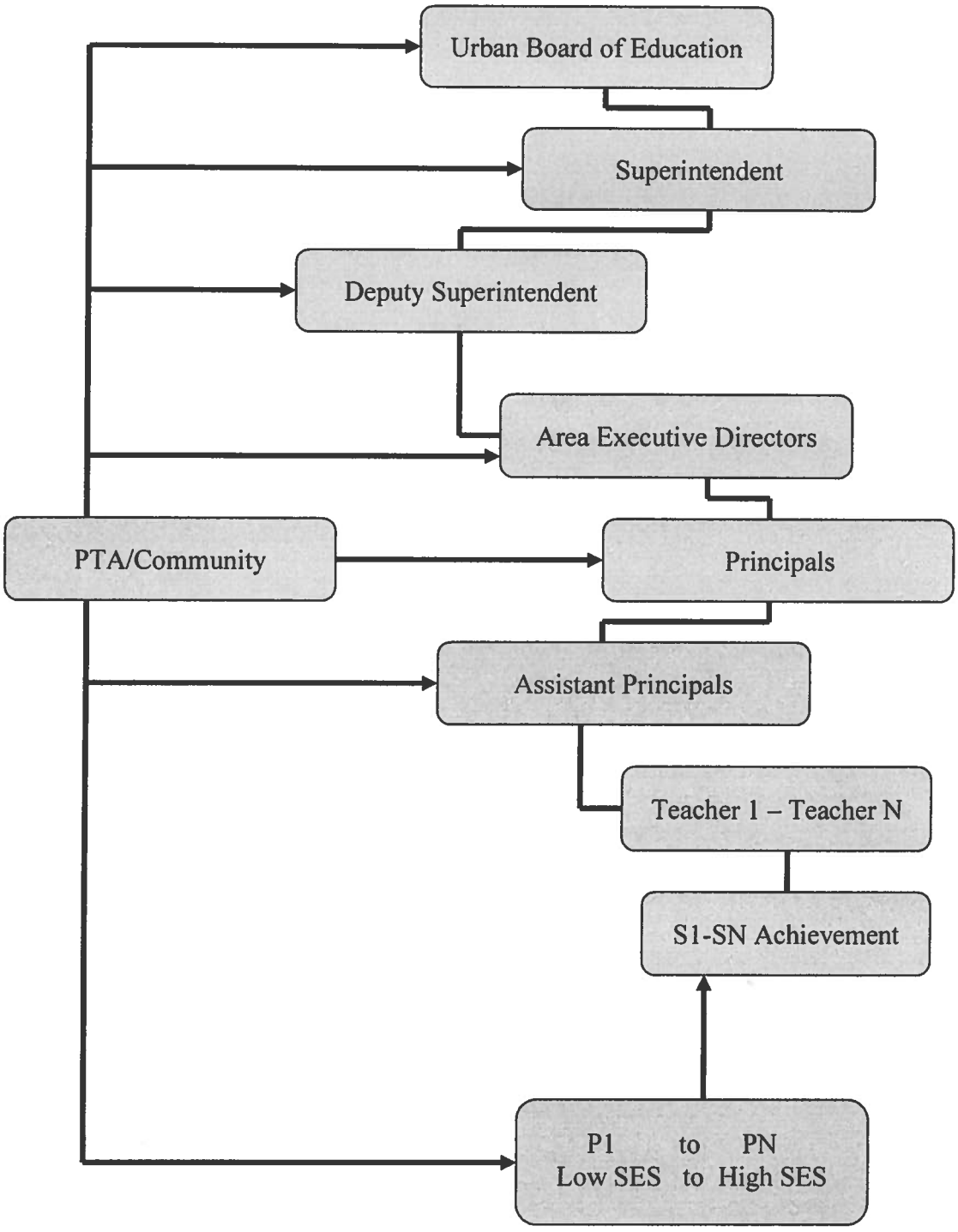

Figure 1. Location of Student Achievement within the District

conversations with the local school/teachers. Mixed messages that may be sent to the local schools by those who work directly under the Superintendent (Area Executive Directors) could also have an impact on student achievement in math. The local school principal's ability to interpret and impart district level expectations to teachers that elicit buy in could have impact on achievement. The teachers' perception of what is important for students to know and be able to do and their ability to implement appropriate instructional practices that lead to student understanding and skill acquisition might impact achievement. Finally, the level of parental involvement, their wants, needs, and expectations of the local school and school board could be have impact on achievement in math.

Although the district office sets the standards for district wide objectives, curriculum, methodology, and assessment, principals at the local schools are responsible for ensuring that the goals are being met at their respective sites. There is also a bureaucracy system in place at the school level. As mentioned previously, student achievement can be affected by the supervisory model that is in place. This research took a closer look at the bureaucracy model at the school site and the levels at which student achievement is most impacted.

At Urban Academy, the principal established a governance model that serves as avenues for teachers to have input in the different operations of the school. Figure 2 shows the flow of the bureaucracy model at Urban Academy.

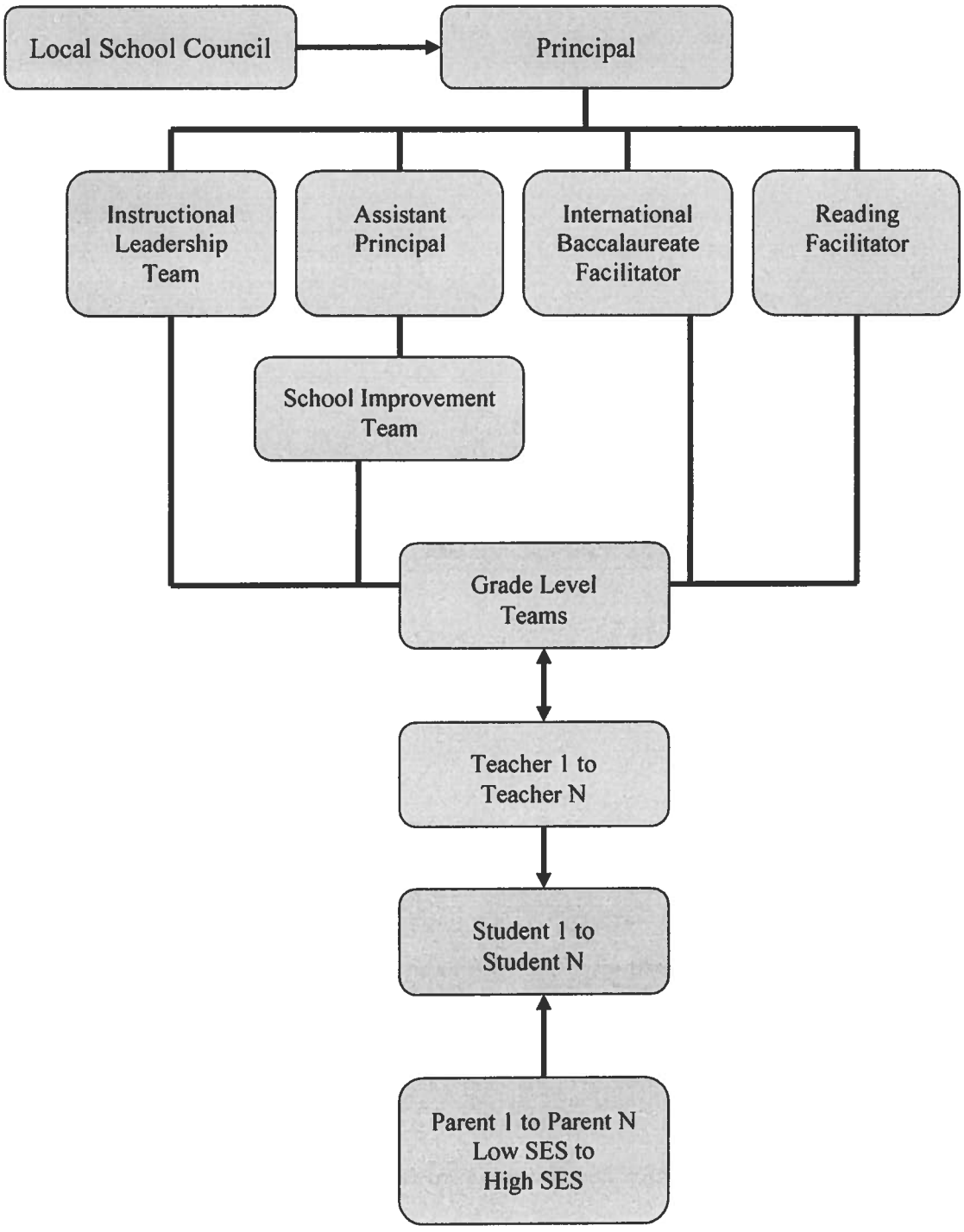

Figure 2. Location of Student Achievement within Urban Academy: Organization Chart in Relation to Student Achievement

There are two arms of governance: The Instructional Leadership Team and the School Improvement Team. Both teams are considered to be leadership teams that work in different capacities. The work that each team does is critical to the functioning of Urban Academy.

The Instructional Leadership Team is responsible for making decisions about the instructional program. Members of this team monitor teacher implementation of instructional practices outlined in the school achievement plan. They examine and give feedback on the work that is produced by students. They analyze performance data and make recommendations for next steps for instructional practices. They monitor the quality of work products displayed in the hallways and throughout the building. They decide on changes that must be made to the School Achievement Plan from year to year. This team utilizes faculty meetings as the forum to provide professional development to teachers and staff members.

The School Improvement Team makes decisions about the policy and procedures implemented at Urban Academy. They determine what procedures are working and if change is necessary. Policies such as safety, discipline, morning arrival and dismissal procedures, public relations/communication practices are decided by this team. The School Improvement Team is responsible for collectively writing the Code of Conduct and in which all students must adhere to in order for the school environment to remain safe and orderly.

All grade levels are represented on both of the governing teams. Members of the other teams that report to these two major arms of governance are selected among their

grade level peers. Members of the administrative team sit on both governance arms. These administrative team members include the principal, assistant principal, international baccalaureate facilitator, reading facilitator, counselor, and secretary. The classroom teacher is informed during collaborative planning sessions or faculty meetings of the final decisions determined by the teams and implements different strategies as mandated in the school achievement plan.

The significance of this bureaucracy at the school level is its possible influence that each team can have on student achievement. At the principal level, the leadership style and evaluation practices can have positive or negative impact on achievement as it relates to how the teaching staff and other members of the organization understand the organizational expectations and their roles within this organization. At the administrative team level (assistant principal, international baccalaureate facilitator, reading facilitator, counselor, and secretary) student achievement could be impacted by the acceptance and understanding of their roles as support personnel for the teaching staff. Additionally, how well the assistant principal understands his/her role as an evaluator. At the Instructional Leadership and School Improvement Team levels, student achievement can be impacted by the teacher representatives' capacity for leadership and their understanding of their roles as decision makers. It can also be impacted by their ability to communicate decisions to their respective teams and assist and support their group with working through organizational changes/expectations. At the teacher level, student achievement could be impacted by the individual teachers' needs and intentions.

CHAPTER II

REVIEW OF THE LITERATURE

Third and Fourth Grade Math Failure

Many students begin to have great difficulty mastering math concepts when they reach third or fourth grade. In the article, *Preventing School Failure, the 2000 National Assessment of Educational Progress* [NAEP] (National Center for Education Statistics, 2005), the data revealed that only 2% of U.S. students attained advanced levels of mathematics achievement by 12th grade. It was indicated that large numbers of U.S. students continue to score below the basic level in mathematics. In the 2003 NAEP report, 23% of fourth grade students and 32% of eighth grade students scored below the basic level (Witzel & Riccomini, 2007). Researchers have argued that low self confidence and or improper instructional practices attribute to the prevalent failure within the United States. Copeland (1984) explains that students are never given the opportunity to explore mathematics. They are told how to do mathematics in place of exploration at their own pace. Post (1988) indicated that the quality of mathematics in the U.S was decreasing in comparison to Japan, China, and Canada. He indicated that the United States movement of back to the basics was the cause because it slowed students' progress of learning mathematics. The school indicated in this research also shows a significant drop in achievement at the third and fourth grade levels. Further research is needed to find out what are the causes and if it can be counteracted.

Prior Language Experience Effect on Student Achievement in Mathematics

Prior language experience, defined as a student's exposure to literature and language, having access to books, being read to, and conversed with prior to formal education years and the attendance to a high-quality preschool, impacts student achievement because it predetermines the students' success rate during the early years. The pre-literacy skills that children develop over the first five or six years of life are related to later reading and school achievement in the elementary school years (Hart & Risely, 1995). Hess and Shipman (1965) indicated in their article entitled, *Early Experience and the Socialization of Cognitive Modes in Children*, the children from culturally disadvantaged homes come to school without the skills necessary for coping with the curriculum because their language development, spoken and written, is poor. They have not developed socially or culturally due to the lack of cognitive meaning in the mother-child communication system. Campbell and Ramey (1995) conducted a study on short and long term intervention strategies on cognitive (reading and math) and school based strategies for intervention (special education and retention). The study was a random design that examined the combined and separate effects of interventions on low socio economic status African American children's early academic performance. There was a preschool age intervention and a school-age follow up intervention. At the preschool age, the students received pre-literacy and pre-phonics curricula that emphasized phonemic awareness skills. During school age, the students received intervention by way of a home-school resource teacher that provided parents with

activities that reinforced the skills learned at school in reading and math. The researchers tested the measures separately and combined. The study results showed that students receiving the combined interventions outperformed those students that received only one measure of intervention. Further, the mean third grade standard score was at 96 for those students that had both interventions. Although this study concentrated on the content area of reading, these students outperformed their counterparts in all other areas. Further research is needed to determine the direct impact of language exposure on math.

Socioeconomic Status Effect on Student Achievement

Socioeconomic status (SES) and parental education impact student achievement in a number of ways. Low income children and children from some cultural and linguistic groups have traditionally performed poorly in U.S. schools (Natriello, Macdill, & Pallas, 1990). There is an association between SES and literacy experiences, exposure, and knowledge a child brings to school. Baker, Serpell, and Sonenshein, (1995) found that children from lower income homes in comparison to those coming from middle income homes had fewer opportunities for interactions involving literacy. Children coming from middle income homes entered into kindergarten showing literacy "readiness" in comparison to children coming from low income homes appearing to be "less ready" (Whitehurst & Lonigan, 1998, p. 848). Language development is stifled for those students who live in impoverished conditions and whose parents lack higher levels of formal education. According to Nancy Kober (2001) in her report, *It Takes More Than Testing: Closing the Achievement Gap*, family income and parent education helped to explain the achievement gap but felt that more was involved. She indicates that at the

preschool and kindergarten level, white and Asian children perform better than black and Hispanic children in areas such as vocabulary, number skills, and general knowledge. She attributed these deficits in black children to school and home/community factors. One of the most common school factors is low expectations for black and Hispanic students. An example of a home/community factor is poverty as it relates to health problems, nutrition, and substandard housing. Paulo Friere (1970) indicated in his text, *Pedagogy of the Oppressed*, that students who are given problems that relate to their real life experiences, are more likely to feel eager to respond. Connecting a real life situation that they can identify with allows for comfort and familiarity to solve the problem and approach similar problems with confidence. Students are better able use critical thinking skills when they are able to bring their own experience and understanding to a new problem. The more students are able to connect to new problems, the greater their opportunity to gain new understanding. Within a classroom when this practice of connecting real world experiences is implemented, students become more committed to tackling new problems or challenges.

Students, as they are increasingly posed with problems relating to themselves in the world and with the world, will feel increasingly challenged and obliged to respond to that challenge. Because they apprehend the challenge as interrelated to other problems within a total context, not as a theoretical question, the resulting comprehension tends to be increasingly critical and thus constantly less alienated. Their response to the challenge evokes new challenges, followed by new understandings; and gradually the students come to regard themselves as committed.

As explained in his paper, *A Theory of Human Motivation*, Abraham Maslow (1943) described the hierarchical order of needs with basic needs (physiological) such as food, shelter, and clothing, being the lower order and most critical before one can move up the hierarchy. He described safety needs, social needs, and esteem needs as part of the hierarchy. Children that live in poverty have to deal with stress that threatens their basic needs not being met. Robert Sapolsky (2005) wrote, "Chronic activation of the stress response impairs cognition, as well as the health, functioning and even survival of some types of neurons" (p. 92). He indicates that the effects of poverty causes memory lapses and difficulty in recalling information learned, weak analytical skills, difficulty in working with abstractions, and the need for concrete materials when instructed. His research confirms how socioeconomic status has psychosocial effects on achievement.

School Leadership Effect on Student Achievement

Leadership, in terms of the principal's education, years of experience, evaluative practices and supervisory style, has an impact on student achievement. According to Getzel and Guba (1968), leadership is defined by the relationship between the subordinates and manager within a social system. Figure 3 shows the social system as described by their theory.

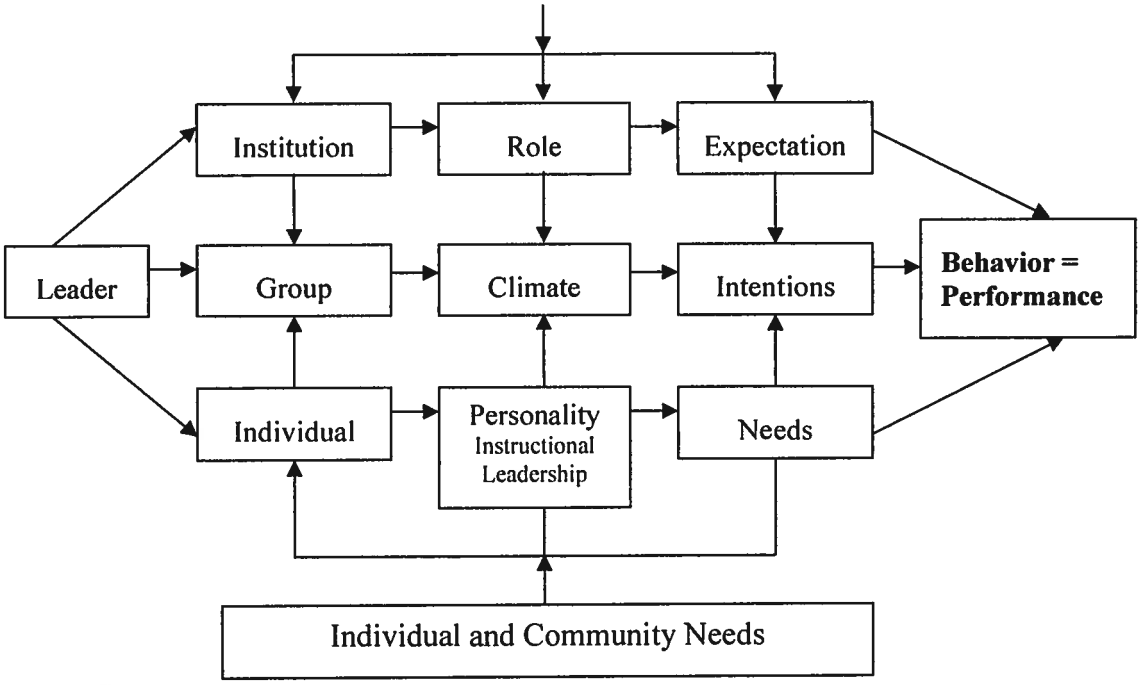

Figure 3. Getzel and Guba's Social System Model

This theory was based on the leader being able to clearly define the structural organization of the institution in terms of roles and expectations. Within this organization, there are individuals with personalities and needs. These individuals are a part of a greater group that forms the organization's climate based on the defined roles and the personalities of the individuals and the intentions based on the expectations of the organization and needs of the individuals. The theory hypothesizes that the output of the organization is determined by the discrepancy factor that exists because of three conflicts within the framework: role-personality, role, and personality. The leader must ensure that the roles and expectations are clearly defined while taking into consideration the needs of the individuals within organization.

According to Blake and Mouton (1964) in their Managerial Grid, leaders that set tasks without the input of their staff ignore the needs of their staff and low productivity results. They also argue that when a leader has high relationship with their staff and does not oversee the expectations, low productivity results as well. When leaders practice both high relationship and allow for the involvement of staff input to set tasks both the leader's and staff needs are taken into account and result in high productivity and high morale. Figure 4 is the Blake and Mouton Managerial Grid that shows the plotted locations of leadership styles (Impoverished, Country Club, Middle of the Road, Produce or Perish, and Team Style) that yield low or high productivity based on the leader's concern for people or concern for production or both.

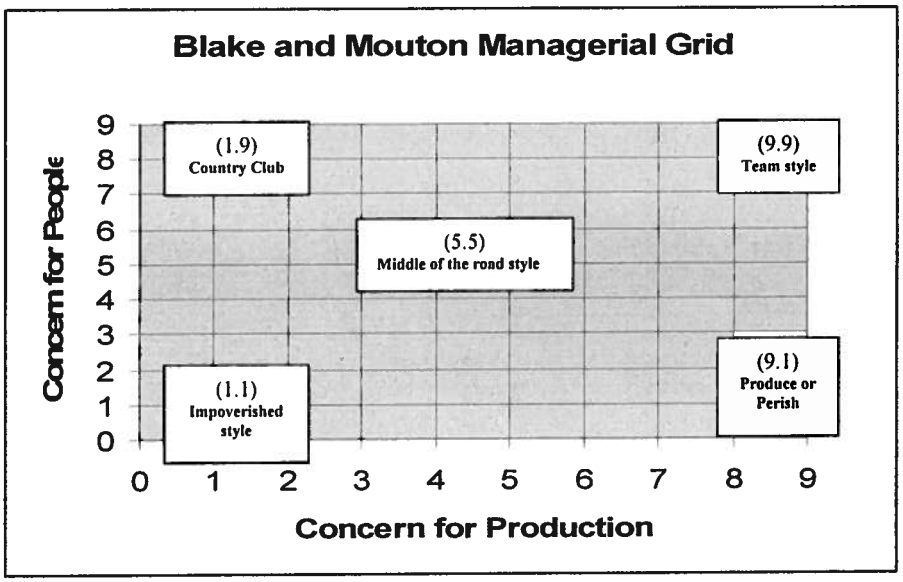

Figure 4. Blake and Mouton Managerial Grid

Similar to Blake and Mouton, Hersey and Blanchard (1968) argued that leadership effectiveness consisted of two dimensions of leader behavior based on task and relationship. They believed that the leader's style was dependent on the situation and the competency of the subordinate. They argued that the leader's style should vary from one person to another. They refer to four types of leadership based on the task and relationship combination. They are: Directing, Coaching, Supportive, and Delegating. The Directing style of leadership (high task-low relationship) informed subordinates of a task and close supervision of performance. The Coaching style of leadership (high task-high relationship) gives subordinates specific directions and solicits suggestions, and gives support from the leader while performing the task. The Supportive style of leadership (high relationship-low task) facilitates and gives support to subordinates for their efforts and shares responsibility for decision making with them. The Delegating style of leadership (low task-low relationship) is when the leader turns over leadership responsibilities to his/her subordinates.

Instructional Practices Effect on Student Achievement

Instructional Practices or teacher methodology is a variable that impacts student achievement. The methods that teachers utilize in the classroom can either engage or disengage learners. According to Dunn and Dunn (1979) in their article, *Learning Styles/Teaching Styles: Should They . . . Can They . . . Be Matched?*, it is imperative that teachers adapt their teaching methods to the different learning styles of the students they teach. Although all teachers have a particular teaching style that is usually geared in the direction in which they best learn, they can learn to adjust their teaching styles to

meet the needs of the students they serve. Through professional development opportunities and the use of learning style and teaching style instruments, teachers can determine how to respond to the student characteristics in their classroom. Dunn and Dunn found that student achievement and motivation increased when learning and teaching styles were matched. According to Hammond (2000) in her article, *Teacher Quality and Student Achievement: A Review of State Policy Evidence,* if a teacher uses diverse methods and relates the learning to the social conditions of the students they serve, the teacher will positively influence learning outcomes. The teacher influences student learning outcomes based on the strategies used in the classroom (Darling-Hammond, 1999). If a teacher utilizes a variety of strategies/methods (based on the various learning styles), he/she is more likely to reach all learners as opposed to using one strategy, reaching only those that learn from that specific learning style. Darling-Hammond also found that teacher quality, involving full certification, was more influential on student achievement than students' demographic information such as poverty, minority status, and language background. She found that the fully certified teachers were the most significant predictor of student achievement in math (Darling-Hammond, 1997; 2000).

"Research indicates that how teachers relate to students in terms of attitudes and perceptions is one of the critical factors in how students learn. Teacher misconceptions can lead to minority students being misunderstood, miseducated, and possibly mistreated" (White-Clark, 2005, p. 25). In her article, *Training Teachers to Succeed in a Multicultural Classroom*, White-Clark describes the prevalent statistics of the

achievement gap that exists between minority students and white students across the nation. She contends that African-American and Latino students from low socioeconomic backgrounds are at least two years behind other students in the fourth grade. The National Assessment of Educational progress indicates that by 12th grade, the gap has widened further with these students lagging at least four years behind. According to White-Clark, professional development would ensure strong collaborative work that will develop long-term capacity for change when it comes to examining teacher expectations and attitudes toward minority students.

Student Efficacy and Engagement Effect on Student Achievement

According to Schweinle, Meyer, and Turner (2006) in their article, *Striking the Right Balance:* Students' *Motivation and Affect in Elementary Mathematics*, the more learning is rewarding and enjoyable and the less it is boring or anxiety producing, the more students will seek it for its own sake. Therefore, students' experiences in classrooms—motivationally and emotionally—are crucial to their attitudes, behaviors, and achievement. The article indicates further that student characteristics play a role in achievement as well as perceptions of challenge, skill, competence and affect on the student's part. When students are motivated to learn and feel confident about learning, they achieve at higher rates. Student efficacy is a determinant of whether or not students will be successful with skill acquisition.

Parental Involvement Effect on Student Achievement

The No Child Left Behind Act (NCLB) of 2001 stipulates that all local educational agencies that receive government funds must develop a parental involvement policy that establishes the expectations for their involvement. This section of the NCLB act is based on research findings that indicate that increased parental involvement yields increased student achievement. "Educational partnership presupposes mutual respect, shared interests and open communication between parents, teachers and the school ... each others' skills in order to produce results which signify an improvement for the children involved" (Driessen, Smit, & Sleegers, 2004, p. 528). Epstein (1992, 2001) distinguished six ways in which schools can create avenues for parental involvement that foster cooperative relations between home and school. They are:

- *Parenting.* Schools must help parents with the creation of positive home conditions to promote the development of children. Parents must prepare their children for school, guide them and raise them.
- *Communicating.* Schools must inform parents about the school program and the progress of children's school careers. Schools must also present such information in a manner which is comprehensible to all parents, and parents must be open to such communication.
- *Volunteering.* The contribution and help of parents during school activities (e.g. reading mothers, organization of celebrations).

- *Learning at home.* Activities aimed at the support, help and monitoring of the learning and development activities of one's school-going children at home (e.g. help with homework).
- *Decision making.* The involvement of parents in the policy and management of the school and the establishment of formal parental representation (e.g. school board or parent council memberships).
- *Collaborating with the community.* The identification and integration of community resources and services with existing school programs, family child-rearing practices and pupil learning.

With considering Epsteins' six avenues for parental involvement, it can be broken down even further to be categorized in two ways, school initiated parental involvement and parent initiated involvement. School initiated involvement can include: provisions made by the school to ensure parental input in the decision making process, ensuring budgetary monies are allotted for parental communication avenues such as mail outs, emails, phone contacts, and newsletters. Parent initiated involvement can include homework help, expectations for behavior at home and at school, and/or extracurricular activities outside of school to be educational. The cognitive and social skills of students have been positively impacted by the increase of parental involvement (Henderson & Mapp, 2002). Additionally, parental involvement has positively impacted student behavior, motivation, social competence, and social relationships between teacher and other students (Jordan, Orozco, & Averett, 2001). According to Driessen and colleagues, parental involvement in the school also has positive impacts on the parents as well. Parents are more positive

toward the school which impacts the greater community. Keeping this in mind, parent involvement seems to decrease with lower socio economic status. It is usually the students that fall within this realm that need greater support from the home and yet, economically disadvantaged parents experience communication barriers with schools. These barriers cause this group of parents to become "invisible" as it relates to involvement.

Professional Development Effect on Student Achievement

The NCLB act of 2001 has also increased the accountability of student achievement on schools. It has placed pressure on schools and districts to provide targeted professional development that will improve teacher methodology in the classrooms. Research regarding the impact of professional development on student achievement is limited; however, the research has examined instructional practices, teachers' knowledge, teachers' beliefs, and other important variables that may be indirectly linked to student achievement (Loucks-Horsley & Matsumoto, 1999). As discussed earlier in *Instructional Practices Effect on Student Achievement* section, teachers are expected to meet the needs of all learners in the classroom by providing instruction that adapts to their different learning styles. Professional development is the avenue that supports teachers in learning how to support all learners. "Practice based" professional development emphasizes long-term active engagement, allows for opportunities to practice and apply what students learn in real world context, and emphasizes connections between teachers' work and their own students' learning (Ball & Cohen, 1999).

CHAPTER III

THEORETICAL FRAMEWORK

The possible causal factors that may yield an outcome of low student achievemen in math are prior language development, socioeconomic status, leadership, instructional practices/teacher methodology, student efficacy/engagement, professional development, and parental involvement. Student achievement in math may be directly or indirectly impacted by students' understanding of the written and spoken language. Students that receive exposure to early language may out perform those who do not. Students may be better able to understand and problem-solve when they have a full command of the language and understand what is being asked of them. Teachers who focus on building language skills, vocabulary development while providing instructional differentiation might be able improve student achievement in math. If children can manipulate concrete materials and are exposed to higher order thinking skills that allow for them to synthesize attained skills, they might be better able to understand more difficult math concepts. With better understanding, student confidence levels will increase in the area of mathematics thus, leading to improved self efficacy and increased student engagement. Teacher instructional strategies such as ensuring that the skills being taught are aligned to the required curriculum, instructing students based on their learning styles, using multiple assessments, and analyzing data frequently to determine skill mastery and next steps for instructional implementation might improve the percentage of students meeting or

exceeding on standardized tests. Administrators that include teachers in the decision making process for determining the possible causes of student failure increase the probability of teachers working toward finding solutions to implement for academic achievement improvement. Additionally, the leader's evaluative practices that focus on continued development (pedagogical) of the teacher may indirectly impact student achievement in a positive way. If students are provided with an instructional program that encompasses these specific strategies daily, improved academic achievement might result. A cyclical effect will occur with improved academic achievement. An increase in achievement will continue to impact the independent variables as teachers and schools continue to ensure that the appropriate adjustments are made that yielded improved achievement in the area of mathematics. Figure 5 shows the proposed relationship of the variables.

Definition of Variables

Dependent Variable

Student Achievement in math in this study refers to third and fourth grade students' performance in the core subject area of mathematics as measured by two benchmarks, fall and winter.

Independent Variables

Prior Language Development refers to a student's exposure to literature and language, having access to books, being read to, and conversed with prior to formal education years, the attendance to a state supported pre-K program or early learning program.

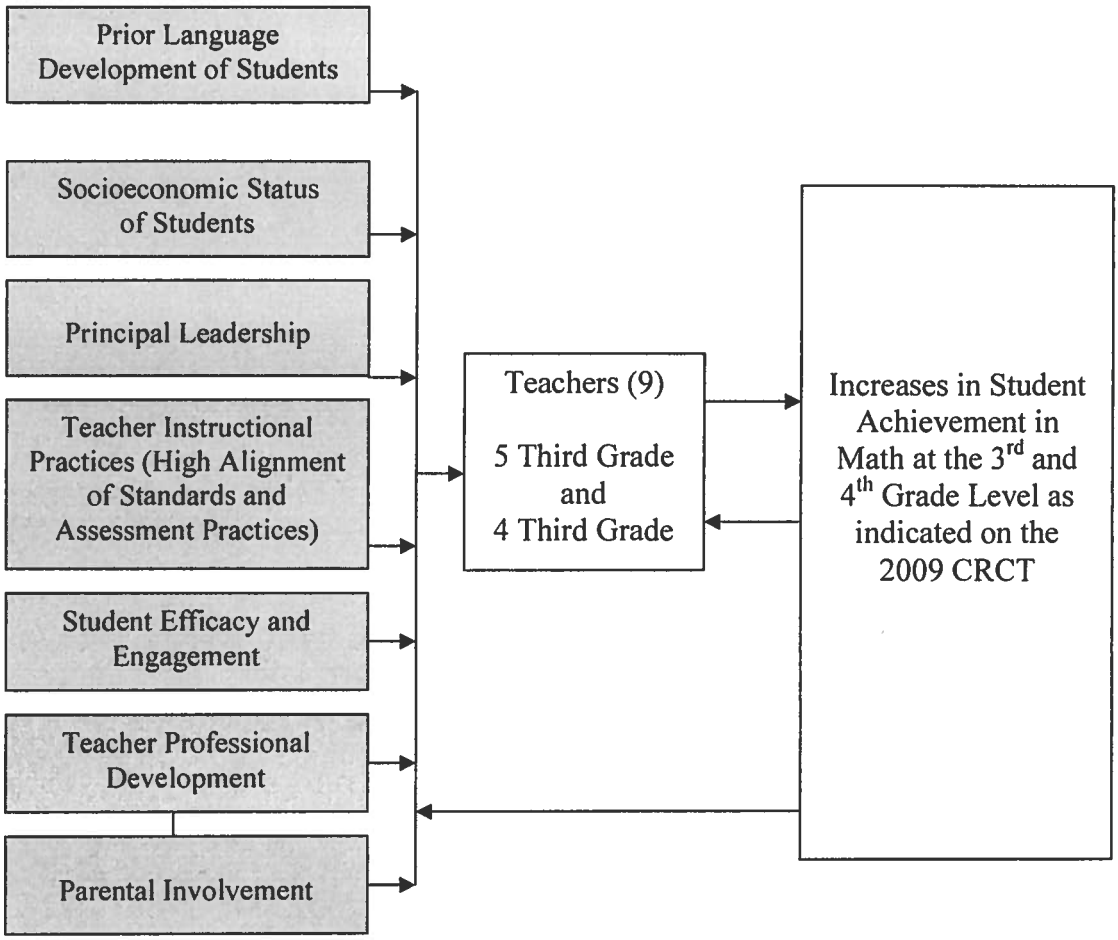

Figure 5. Proposed Relationships among the Variables

Socioeconomic Status refers to the average annual income of a household that qualify children from these homes for free and reduced lunch at school.

Leadership refers to how the Principal and members of the administrative team interact with, organize, supervise and evaluate teachers and other personnel within the school. It also refers to the principal's leadership style, accessibility, opportunities for staff development, knowledgeable, usefulness of suggestions for improvement, collaborative opportunities.

Instructional Practices refers to the extent to which teachers use a variety of strategies to address the needs of all learners in the classroom; the extent to which they use the experiences and/or knowledge of students; the extent to which differentiation occurs based on the learning styles of the students; the extent to which teachers believe that students can and will perform at high levels; the extent to which teachers align their instructional lesson plans to state required standards; the extent to which multiple assessments are administered to students to determine mastery of skills taught and the frequency of the administration of these assessments.

Student Efficacy refers to the extent to which students exhibit self-confidence and a feeling of being in control of their own learning. In this study, efficacy in mathematics will be the focus.

Professional Development refers to various training opportunities that are provided to staff so that they may improve on or fine tune their existing knowledge base in math and the training is perceived as beneficial/effective.

Parental Involvement refers to any assistance that is provided by the parent that helps to impact student learning. It also refers to the highest level of education of the mother, father, or primary caretaker.

The theoretical framework focuses on the independent variables: prior language development, socioeconomic status, leadership, teacher instructional practices, student efficacy, professional development, and parental involvement and how they impact the dependent variable, student achievement.

It is proposed that student achievement in mathematics could be explained by the prior language development of the student and the negative impacts of socioeconomic status. In the article, The Language Factor in Mathematics Tests, (Abedi and Lord, 1995), the investigation of the importance of language on mathematics tests yielded a finding of students of whom were not proficient speakers of English scored significantly lower than those who were. These students were inclusive of English as a second language (ESOL) and students with low socioeconomic status. The study further indicated that modifying the linguistic structures in math word problems can affect student performance. With linguistic modifications, both ELL students and low SES students experienced higher achievement. The low SES students benefited the most with modifications.

It is further proposed that student achievement is impacted by leadership, organizational structures that the leader establishes, and his/her evaluative practices. According to Lippitt and White (1939) in their article, *Democratic, Authoritarian, and Laissez-Faire Groups*), a leader that involves the members of the group in the decision making process will promote a more cohesive team that is willing to work collegially and collaboratively around student learning issues. It is assumed that if the leadership and teachers 1 through N within a school consider the differences of the students they serve and understand how socioeconomic status, parental education, and other variables impact their early language development, then it would be expected for teacher methodologies to be tailored around such understandings. Collegiality and collaboration will be required for instructional tailoring (differentiation) needed to address the varied learners. In order

to meet the individual needs of the students, teachers must implement appropriate practices that build language in order to improve deficiencies in math.

Teacher instructional methodology, inclusive of expectations, exposure to higher order thinking skills, and assessment practices impact student achievement. Often with low socioeconomic status of students come low expectations for performance. The Expectancy Theory (Vroom, 1964), indicates that when students get low grades for class assignments they are likely to put in less effort, leading to even lower grades. With the consideration of being poor performers, low achieving students tend to have less recognition from teachers and fellow students. The implication for achievement in mathematics is, children that never experience success in math, will begin to expect to fail and therefore will be unmotivated when presented with new mathematics. Additionally, the instructional methodology implemented in the classroom is a reflection of the lesson plan that has been developed. If teachers carefully design the lesson plan to meet the needs of the varied learners within the classroom, all children should be successful learners.

"Research indicates that how teachers relate to students in terms of attitudes and perceptions is one of the critical factors in how students learn. Teacher misconceptions can lead to minority students being misunderstood, miseducated, and possibly mistreated" (White-Clark, 2005, p. 25). Professional development opportunities must be available to enhance pedagogical practices for differentiating instruction while aligning lessons to state standards. Teachers must be able to relate to the differences of the students that they teach. With the diversity of the socioeconomic statuses of the students

within Urban Academy, teachers must be able to determine cognitive level, exposure, experiences, and the needs of the individuals. Professional development opportunities can offset the misconceptions and/or misdiagnosis of the clientele being served. The use of higher order thinking skills must be employed to help students to learn problem solving strategies. Teachers must then informally and formally assess mastery of skills acquired so that their next steps for instructional delivery can be determined.

The principal must make clear the roles and expectations for implementation. With establishing clear roles and expectations, the principal will still have to consider the staff members and their needs. According to Blake and Mouton's (1964) theory of management, the better style of leadership was the middle of the road which balanced the concern for people and concern for production. They believed that all managers should aspire to be a "team builder." Keeping this in mind, the principal should develop teams among the grade levels and across grade levels for continued team work and collaboration. It is proposed that once all of the aforementioned variables are taken into consideration and/or implemented, student achievement in mathematics will increase.

Research Questions

RQ1: Is there a relationship between prior language development and student achievement?

RQ2: Is there a relationship between socioeconomic status and student achievement?

RQ3: Is there a relationship between leadership and student achievement?

RQ4: Is there a relationship between teacher instructional practices and student achievement?

RQ5: Is there a relationship between student efficacy and student achievement?

RQ6: Is there a relationship between parental involvement and student achievement?

RQ7: Is there a relationship between professional development and student achievement?

Limitations of Study

This study relied on the honesty of the respondents to complete three surveys. The honest responses of the teachers may have been impacted by the supervisor /subordinate relationship. The subordinates may have been reluctant to be candid because of the relationship. The honest responses of the parents may have been impacted by their ability or lack there of to support their child mathematically. The honest responses of the students may have been impacted by the student/teacher relationship. The students may have answered questions based on what they felt the teacher wanted to hear and may not have been candid responses.

The study is limited to one school in one school district and completed in a short time span (six months). Additionally, the benchmark assessment administered to monitor the progress of the treatment was developed solely to be used in schools within the district used in this study.

The treatment that was targeted for only four teachers that were a part of the experimental group was compromised by the sharing of some strategies with the control

group of the teachers. The control group of teachers may have used the strategies within their classrooms whereby exposing the students to treatment strategies to improve student achievement.

CHAPTER IV

RESEARCH METHODOLOGY

The Urban Public Schools system granted permission to the author of this study. The school system's name is not mentioned to ensure anonymity of the system. The school, individual teachers, and students used in the study were not identified to ensure anonymity. A treatment was developed and implemented during the 2008-2009 school year (see Appendix A) based on the perceived impacting variables.

Instrumentation

Surveys to parents, teachers, and students were used to collect the data to examine if there is a relationship between student achievement in mathematics and the referenced variables: prior language development, socioeconomic status, leadership, instructional practices, student efficacy, professional development, and parental involvement. Teachers, students, and parents were surveyed to determine significant correlations between specific independent variables and student achievement. Four surveys were completed. The *Student Survey* (Smith, 2007) was administered to determine significance between student interest (efficacy) in math and student achievement. The *Urban Academy Teacher Survey* (Smith, 2007; Atlanta Public Schools Two-Step Process for Assuring Effective Teaching, 2008) was used to determine the significance between general attitude toward math, the pedagogical differences of teachers (practices, years of

experience, and professional development opportunities) and student achievement. The *Parent Survey* (Smith, 2007) was used to determine the significance between students' socioeconomic status, students' prior experiences, and exposure to language development (parent highest education level and student enrollment in early nursery school programs) and student achievement. The *Leadership Survey* (Smith 2007) was used to determine the significance between teachers' perceptions of the strengths of the principal's leadership style, and administrative evaluative practices and student achievement. The items on the developed leadership survey were reflective of the six leadership national standards developed by the Interstate School Leaders Licensure Consortium (ISLLC).

Validity of Surveys

An item to scale test was conducted on the surveys used in this study. The item to scale test is an item analysis of the strength of the questions asked on the survey that would yield accurate information regarding the variable when the survey is completed. The item to scale is a measure of the construct validity of the instrument. Because of the low number of surveys returned for the Parent and Teacher surveys, an accurate analysis could not be produced. Table 3 reflects an item to scale chart for the Student Survey. The data reveals that out of the ten questions that were asked, questions 2, 3, 4, 5, 6, 7, and 10 were strong as it relates to determining accuracy in self efficacy. Questions 2 through 7 and 10 showed a high significant correlation at .00 between self efficacy and each of these items on the survey.

Table 3

Correlations—Items to Scale: Student Survey-Self Efficacy (All 10 Items on Survey)

		Q1	Q2	Q3	Q4	Q5	Q6
Q1	Pearson Correlation	1	.549	-.297	.311	.227	.350
	Sig. (2-tailed)	.	.000	.000	.000	.002	.000
	N	191	191	191	190	191	191
Q2	Pearson Correlation	.549	1	-.191	.336	.193	.462
	Sig. (2-tailed)	.000	.	.008	.000	.007	.000
	N	191	191	191	190	191	191
Q3	Pearson Correlation	-.297	-.191	1	-.157	.039	-.122
	Sig. (2-tailed)	.000	.008	.	.031	.591	.093
	N	191	191	191	190	191	191
Q4	Pearson Correlation	.311	.336	-.157	1	.380	.177
	Sig. (2-tailed)	.000	.000	.031	.	.000	.015
	N	190	190	190	190	190	190
Q5	Pearson Correlation	.227	.193	.039	.380	1	.216
	Sig. (2-tailed)	.002	.007	.591	.000	.	.003
	N	191	191	191	190	191	191
Q6	Pearson Correlation	.350	.462	-.122	.177	.216	1
	Sig. (2-tailed)	.000	.000	.093	.015	.003	.
	N	191	191	191	190	191	191
Q7	Pearson Correlation	.276	.294	-.142	.064	.007	.415
	Sig. (2-tailed)	.000	.000	.050	.380	.923	.000
	N	191	191	191	190	191	191
Q8	Pearson Correlation	-.025	-.091	.148	.074	.244	.065
	Sig. (2-tailed)	.728	.209	.041	.308	.001	.373
	N	191	191	191	190	191	191

Table 3 (continued)

		Q1	Q2	Q3	Q4	Q5	Q6
Q9	Pearson Correlation	.038	-.079	.111	-.037	.137	.079
	Sig. (2-tailed)	.597	.275	.127	.617	.059	.279
	N	191	191	191	190	191	191
Q10	Pearson Correlation	.443	.459	-.193	.171	.166	.425
	Sig. (2-tailed)	.000	.000	.007	.018	.021	.000
	N	191	191	191	190	191	191
SELFEFF	Pearson Correlation	.557	.541	.059	.460	.563	.601
	Sig. (2-tailed)	.000	.000	.420	.000	.000	.000
	N	190	190	190	190	190	190

		Q7	Q8	Q9	Q10	SELFEFF
Q1	Pearson Correlation	.276	-.025	.038	.443	.557
	Sig. (2-tailed)	.000	.728	.597	.000	.000
	N	191	191	191	191	190
Q2	Pearson Correlation	.294	-.091	-.079	.459	.541
	Sig. (2-tailed)	.000	.209	.275	.000	.000
	N	191	191	191	191	190
Q3	Pearson Correlation	-.142	.148	.111	-.193	.059
	Sig. (2-tailed)	.050	.041	.127	.007	.420
	N	191	191	191	191	190
Q4	Pearson Correlation	.064	.074	-.037	.171	.460
	Sig. (2-tailed)	.380	.308	.617	.018	.000
	N	190	190	190	190	190
Q5	Pearson Correlation	.007	.244	.137	.166	.563
	Sig. (2-tailed)	.923	.001	.059	.021	.000
	N	191	191	191	191	190

Table 3 (continued)

		Q7	Q8	Q9	Q10	SELFEFF
Q6	Pearson Correlation	.415	.065	.079	.425	.601
	Sig. (2-tailed)	.000	.373	.279	.000	.000
	N	191	191	191	191	190
Q7	Pearson Correlation	1	-.037	.061	.360	.411
	Sig. (2-tailed)	.	.614	.404	.000	.000
	N	191	191	191	191	190
Q8	Pearson Correlation	-.037	1	.112	.000	.315
	Sig. (2-tailed)	.614	.	.124	.996	.000
	N	191	191	191	191	190
Q9	Pearson Correlation	.061	.112	1	.059	.524
	Sig. (2-tailed)	.404	.124	.	.414	.000
	N	191	191	191	191	190
Q10	Pearson Correlation	.360	.000	.059	1	.545
	Sig. (2-tailed)	.000	.996	.414	.	.000
	N	191	191	191	191	190
SELFEFF	Pearson Correlation	.411	.315	.524	.545	1
	Sig. (2-tailed)	.000	.000	.000	.000	.
	N	190	190	190	190	190

**Correlation is significant at the 0.01 level (2-tailed).

*Correlation is significant at the 0.05 level (2-tailed).

Table 4 reflects an item to scale chart for the leadership instrument used in this study which is an item analysis of the strength of the questions asked on the survey that would yield accurate information regarding the variable when the survey is completed. The data reveals that out of the 15 questions asked in the survey, seven items correlated strongly with the overall leadership scale. As it relates to determining accuracy in leadership, these questions showed a high significant correlation lower than .05.

Table 4

Correlations: Item to Scale for Leadership Instrument

		V3	V4	V5	V6	V7	V8	V9	V10
V3	Pearson Correlation	1	.119	.066	-.084	-.086	.217	-.090	-.163
	Sig. (2-tailed)	.	.616	.783	.726	.718	.359	.707	.494
	N	20	20	20	20	20	20	20	20
V4	Pearson Correlation	.119	1	.663	.456	.123	.481	.205	.340
	Sig. (2-tailed)	.616	.	.001	.043	.606	.032	.385	.142
	N	20	20	20	20	20	20	20	20
V5	Pearson Correlation	.066	.663	1	.472	.374	.526	.374	.441
	Sig. (2-tailed)	.783	.001	.	.035	.104	.017	.104	.052
	N	20	20	20	20	20	20	20	20
V6	Pearson Correlation	-.084	.456	.472	1	.801	.415	.191	.320
	Sig. (2-tailed)	.726	.043	.035	.	.000	.069	.421	.170
	N	20	20	20	20	20	20	20	20

Table 4 (continued)

		V3	V4	V5	V6	V7	V8	V9	V10
V7	Pearson Correlation	-.086	.123	.374	.801	1	.377	.205	.131
	Sig. (2-tailed)	.718	.606	.104	.000	.	.101	.385	.581
	N	20	20	20	20	20	20	20	20
V8	Pearson Correlation	.217	.481	.526	.415	.377	1	.451	.454
	Sig. (2-tailed)	.359	.032	.017	.069	.101	.	.046	.044
	N	20	20	20	20	20	20	20	20
V9	Pearson Correlation	-.090	.205	.374	.191	.205	.451	1	.634
	Sig. (2-tailed)	.707	.385	.104	.421	.385	.046	.	.003
	N	20	20	20	20	20	20	20	20
V10	Pearson Correlation	-.163	.340	.441	.320	.131	.454	.634	1
	Sig. (2-tailed)	.494	.142	.052	.170	.581	.044	.003	.
	N	20	20	20	20	20	20	20	20
V11	Pearson Correlation	-.240	.189	.273	.369	.303	.500	.499	.735
	Sig. (2-tailed)	.309	.426	.245	.109	.194	.025	.025	.000
	N	20	20	20	20	20	20	20	20
V12	Pearson Correlation	.051	.175	.391	.194	.305	.579	.601	.490
	Sig. (2-tailed)	.829	.460	.088	.412	.191	.007	.005	.028
	N	20	20	20	20	20	20	20	20
V13	Pearson Correlation	.007	.467	.625	.194	.175	.694	.718	.623
	Sig. (2-tailed)	.975	.038	.003	.412	.460	.001	.000	.003
	N	20	20	20	20	20	20	20	20
V14	Pearson Correlation	-.188	.276	.138	.242	.031	.299	.249	.188
	Sig. (2-tailed)	.427	.238	.561	.305	.898	.201	.290	.427
	N	20	20	20	20	20	20	20	20

Table 4 (continued)

		V3	V4	V5	V6	V7	V8	V9	V10
V15	Pearson Correlation	.139	-.339	-.305	-.252	-.151	.017	.390	.077
	Sig. (2-tailed)	.560	.144	.191	.284	.526	.945	.089	.747
	N	20	20	20	20	20	20	20	20
V16	Pearson Correlation	.179	-.316	-.363	-.235	-.053	-.062	.047	-.197
	Sig. (2-tailed)	.450	.175	.115	.319	.826	.795	.843	.405
	N	20	20	20	20	20	20	20	20
V17	Pearson Correlation	.004	.011	-.192	-.347	-.288	-.036	.024	-.053
	Sig. (2-tailed)	.986	.963	.418	.134	.219	.879	.922	.823
	N	20	20	20	20	20	20	20	20
LEADSTYL	Pearson Correlation	.744	.431	.432	.272	.225	.666	.429	.329
	Sig. (2-tailed)	.000	.058	.057	.245	.340	.001	.059	.156
	N	20	20	20	20	20	20	20	20

		V11	V12	V13	V14	V15	V16	V17	LEADSTYL
V3	Pearson Correlation	-.240	.051	.007	-.188	.139	.179	-.004	.744
	Sig. (2-tailed)	.309	.829	.975	.427	.560	.450	.986	.000
	N	20	20	20	20	20	20	20	20
V4	Pearson Correlation	.189	.175	.467	.276	-.339	-.316	.011	.431
	Sig. (2-tailed)	.426	.460	.038	.238	.144	.175	.963	.058
	N	20	20	20	20	20	20	20	20
V5	Pearson Correlation	.273	.391	.625	.138	-.305	-.363	-.192	.432
	Sig. (2-tailed)	.245	.088	.003	.561	.191	.115	.418	.057
	N	20	20	20	20	20	20	20	20

Table 4 (continued)

		V11	V12	V13	V14	V15	V16	V17	LEADSTYL
V6	Pearson Correlation	.369	.194	.194	.242	-.252	-.235	-.347	.272
	Sig. (2-tailed)	.109	.412	.412	.305	.284	.319	.134	.245
	N	20	20	20	20	20	20	20	20
V7	Pearson Correlation	.303	.305	.175	.031	-.151	-.053	-.288	.225
	Sig. (2-tailed)	.194	.191	.460	.898	.526	.826	.219	.340
	N	**20**	**20**	**20**	**20**	**20**	**20**	**20**	**20**
V8	Pearson Correlation	.500	.579	.694	.299	.017	-.062	-.036	.666
	Sig. (2-tailed)	.025	.007	.001	.201	.945	.795	.879	.001
	N	20	20	20	20	20	20	20	20
V9	Pearson Correlation	.499	.601	.718	.249	.390	.047	.024	.429
	Sig. (2-tailed)	.025	.005	.000	.290	.089	.843	.922	.059
	N	20	20	20	20	20	20	20	20
V10	Pearson Correlation	.735	.490	.623	.188	.077	-.197	-.053	.329
	Sig. (2-tailed)	.000	.028	.003	.427	.747	.405	.823	.156
	N	20	20	20	20	20	20	20	20
V11	Pearson Correlation	1	.767	.514	.330	.018	.017	-.040	.296
	Sig. (2-tailed)	.	.000	.021	.155	.939	.943	.866	.206
	N	20	20	20	20	20	20	20	20
V12	Pearson Correlation	.767	1	.712	.443	-.021	.078	.046	.535
	Sig. (2-tailed)	.000	.	.000	.051	.930	.744	.849	.015
	N	20	20	20	20	20	20	20	20
V13	Pearson Correlation	.514	.712	1	.307	.084	-.019	.128	.556
	Sig. (2-tailed)	.021	.000	.	.189	.726	.935	.589	.011
	N	20	20	20	20	20	20	20	20

Table 4 (continued)

		V11	V12	V13	V14	V15	V16	V17	LEADSTYL
V14	Pearson Correlation	.330	.443	.307	1	-.395	-.369	-.373	.033
	Sig. (2-tailed)	.155	.051	.189	.	.084	.110	.106	.889
	N	20	20	20	20	20	20	20	20
V15	Pearson Correlation	.018	-.021	.084	-.395	1	.579	.433	.241
	Sig. (2-tailed)	.939	.930	.726	.084	.	.007	.057	.305
	N	20	20	20	20	20	20	20	20
V16	Pearson Correlation	.017	.078	-.019	-.369	.579	1	.684	.254
	Sig. (2-tailed)	.943	.744	.935	.110	.007	.	.001	.279
	N	20	20	20	20	20	20	20	20
V17	Pearson Correlation	-.040	.046	.128	-.373	.433	.684	1	.146
	Sig. (2-tailed)	.866	.849	.589	.106	.057	.001	.	.538
	N	20	20	20	20	20	20	20	20
LEADSTYL	Pearson Correlation	.296	.535	.556	.033	.241	.254	.146	1
	Sig. (2-tailed)	.206	.015	.011	.889	.305	.279	.538	.
	N	20	20	20	20	20	20	20	20

**Correlation is significant at the 0.01 level (2-tailed).

*Correlation is significant at the 0.05 level (2-tailed).

Reliability of Assessments

The Urban Public Schools' fall and winter Benchmark assessments were used for the purpose of monitoring the treatment. The fall Benchmark served as a pre-test and administered during the month of September 2008 to all third and fourth grade students. The Urban Public Schools winter Benchmark assessment was administered as a posttest

during the month of February 2009 to the same grade levels as well. The Benchmark Assessment was developed by the Urban Public Schools' Research, Planning and Accountability Department along with the Teaching and Learning Department. The assessment is a compilation of questions that are retrieved from the Georgia Department of Education On-line Assessment website, an online system for creating and administering tests using questions exactly like those used on the spring Criterion-Referenced Competency Tests (CRCT) made available to teachers, students, and administrators in Georgia's public schools (Komatsu, 2004). The Benchmark questions are of the same content and weights as the CRCT and are used within the Urban Public Schools district as a predictor of CRCT performance outcomes. It is designed to measure how well students acquire the skills and knowledge described in the Georgia Performance Standards (GPS). The questions require both low and high cognitive demand and conceptual and computational skills. The Benchmark is designed similarly by content and questions as the CRCT. The effectiveness of the treatment was determined using the results of the winter benchmark.

The researcher used a t-test to evaluate the post test percentage of the students meeting grade level expectations after receiving treatment in comparison to the pre-test percentage of students meeting grade level expectations. A t-test is a test of the statistical significance of the results of a comparison between two groups. In this study, the researcher compared the percentage of students meeting expectations on Benchmark 1 and Benchmark 2 within five third grade classes and four fourth grade classes. For the purpose of this study, total class improvement, using percent passing, was utilized as a

predictor of how students would perform on the 2009 CRCT. The performance of the total student population in the treatment classes on the spring 2009 Georgia Criterion Referenced Competency Tests was used to measure student achievement.

Measurement of Variables

Dependent Variable

Student achievement in mathematics was monitored by using the Benchmark results of the total class percentage of students meeting grade level expectations in mathematics.

Phase 1—fall Benchmark results (pretest)

Phase 2—winter Benchmark results (posttest)

Student achievement in mathematics was measured by the results of the percentage of students meeting or exceeding state standards in the treatment classes on the spring 2009 CRCT in mathematics.

Independent Variables

Student prior language experience was measured by the *Urban Academy Parent Survey*; items A:1 and C:2-6.

Student socioeconomic status was measured by the *Urban Academy Parent Survey*; items B:7-11.

Leadership style was measured by the *Leadership Survey*; items 1-15.

Teacher instructional practice was measured by the *Urban Academy Teacher Survey,* items 1-5, 11-15, 21-50 and the t-test, utilizing the comparative data between Benchmark 1 and Benchmark 2.

Student Efficacy was measured by the *Student Survey*; items 1-10.

Parental Involvement was measured by the *Urban Academy Teacher Survey*; items 6-10.

Professional Development was measured by the *Urban Academy Teacher Survey*; items 16-20.

Population

The students surveyed were 100% African-American. Sixty-nine percent of the students were economically disadvantaged (based on free or reduced lunch status). The teacher population was 96% African-American and 4% Caucasian. The total population parents were African-American.

Sampling

The sampling for the student and parents surveys consisted of the total population of third and fourth grade students and parents that agreed to participate. Total population of teachers was used for the leadership and teacher survey sampling. The sampling for the teachers receiving treatment was deliberately assigned. On each grade level, one novice (0-3 years experience) and one veteran teacher (4+ years experience) on the third and fourth grade levels were selected for the treatment.

Data Collection Procedures

Members of the Urban Academy administrative team were used to assist with data collection and analysis in order to safeguard anonymity, confidentiality and validity.

1. All classroom teachers were surveyed during the month of September 2008. Targeted classroom teachers were surveyed during the month of September to gather information on their perceived teaching styles and on their perception of the principal's leadership style. Surveys were collected and marked by grade level and homeroom to preserve anonymity.
2. Students were surveyed during the month of September to gain information regarding their attitude toward math. Surveys were collected and marked by grade level and homeroom to preserve anonymity.
3. Parents were surveyed during the month of September. Parent surveys were sent home with students with an explanation letter attached indicating what the survey would be used for. Surveys were collected and marked by grade level and homeroom to preserve anonymity.
4. The Observation Based Instructional Assessment (OBIA) was used by the researcher as a pre and post instrument as part of the treatment. The Instrument was marked by Teacher 1-N and grade level to preserve anonymity. It was used during the treatment by the teachers to increase their awareness of their own use of practices that they were professionally developed to use.
5. The Statistical Package for the Social Science (SPSS) was used to determine the significance between dependent and independent variables.

Human Subjects

No student, school, administrator, or teacher can be identified in this study. All participants are protected by anonymity.

CHAPTER V

DATA ANALYSIS

This study examined if student achievement in mathematics is impacted by early language deficiencies and other variables and if it can be improved when controlling these variables. There is a need within Urban Academy and the larger school district for educational researchers to explore specific strategies that will lead to improved student performance in the area of mathematics. The strategies can be duplicated to support other schools inside and outside of the Urban Public Schools district if the treatment used in this study positively impacts student achievement in mathematics.

A t-test comparison between Benchmark 1 and Benchmark 2 shows an increase in student performance in the area of mathematics. Benchmark 1 was administered pre-treatment. Benchmark 2 was administered post treatment. The test of differences between teacher instructional practices pretreatment verses posttreatment showed an increase in student achievement post treatment. The coefficient between the pre-test and posttest is .002, and this is significant at the probability level of .05.

Table 5 shows that there was a strong difference between the two. The treatment had a positive impact on achievement.

Table 5

Comparison of Benchmarks: Experimental Pre and Posttest Results

T Test Benchmark 1 (Pre treatment) and Benchmark 2 (Post treatment)									
		Mean	N	Std. Deviation	Std. Error Mean				
Pair 1	V54	31.13	9	3.271	1.156				
	V55	54.25	9	14.459	5.112				
Paired Samples Test									
		Paired Differences							
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
					Lower	Upper			
Pair 1	V54 - V55	-23.13	13.943	4.930	-34.78	-11.47	-4.691	7	.002

There were seven research questions asked and investigated for significance in relation to student achievement. Student achievement is based on the 2009 Criterion Referenced Competency results. These relationships and findings were as follows:

RQ1: Is there a relationship between prior language development and student achievement?

Language development was inclusive of exposure to literature. Utilizing a parent survey, Table 6 shows the data with respect to exposure to literature.

Table 6

Correlations: Parent Survey Variables with CRCT and Benchmark Scores

		PARED	FRL	BMARKFAL	BMARKWIN
PARED	Pearson Correlation	1	-.227	-.260	.024
	Sig. (2-tailed)	.	.219	.158	.896
	N	31	31	31	31
FRL	Pearson Correlation	-.227	1	.373	.170
	Sig. (2-tailed)	.219	.	.036	.351
	N	31	32	32	32
BMARKFAL	Pearson Correlation	-.260	.373	1	.159
	Sig. (2-tailed)	.158	.036	.	.386
	N	31	32	32	32
BMARKWIN	Pearson Correlation	.024	.170	.159	1
	Sig. (2-tailed)	.896	.351	.386	.
	N	31	32	32	32
CRCT08	Pearson Correlation	-.023	-.039	.198	.583
	Sig. (2-tailed)	.903	.831	.277	.000
	N	31	32	32	32
CRCT09	Pearson Correlation	.139	.060	.142	.867
	Sig. (2-tailed)	.455	.743	.439	.000
	N	31	32	32	32
EXPOLIT	Pearson Correlation	.326	.167	-.050	.273
	Sig. (2-tailed)	.073	.360	.787	.131
	N	31	32	32	32

Table 6 (continued)

		PARED	FRL	BMARKFAL	BMARKWIN
HOMSUP	Pearson Correlation	-.125	-.182	-.058	-.049
	Sig. (2-tailed)	.504	.319	.751	.790
	N	31	32	32	32
		CRCT08	CRCT09	EXPOLIT	HOMSUP
PARED	Pearson Correlation	-.023	.139	.326	-.125
	Sig. (2-tailed)	.903	.455	.073	.504
	N	31	31	31	31
FRL	Pearson Correlation	-.039	.060	.167	-.182
	Sig. (2-tailed)	.831	.743	.360	.319
	N	32	32	32	32
BMARKFAL	Pearson Correlation	.198	.142	-.050	-.058
	Sig. (2-tailed)	.277	.439	.787	.751
	N	32	32	32	32
BMARKWIN	Pearson Correlation	.583	.867	.273	-.049
	Sig. (2-tailed)	.000	.000	.131	.790
	N	32	32	32	32
CRCT08	Pearson Correlation	1	.587	.020	.011
	Sig. (2-tailed)	.	.000	.915	.954
	N	32	32	32	32
CRCT09	Pearson Correlation	.587	1	.267	-.175
	Sig. (2-tailed)	.000	.	.139	.339
	N	32	32	32	32

Table 6 (continued)

		CRCT08	CRCT09	EXPOLIT	HOMSUP
EXPOLIT	Pearson Correlation	.020	.267	1	.177
	Sig. (2-tailed)	.915	.139	.	.331
	N	32	32	32	32
HOMSUP	Pearson Correlation	.011	-.175	.177	1
	Sig. (2-tailed)	.954	.339	.331	.
	N	32	32	32	32

* Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).

The correlation coefficient between exposure to literature and student achievement as measured by the 2009 CRCT results is .267, and the level of significance is .139. This is above the accepted level of .05 and therefore there is no significant relationship between these two variables.

RQ2: Is there a relationship between socioeconomic status and student achievement?

Utilizing the parent survey, the data with respect to this research question are shown in Table 6. The correlation coefficient between socioeconomic status and student achievement as measured by the 2009 CRCT results is .060, and the level of significance is .743. This is above the accepted level of .05 and therefore there no significant relationship between these two variables.

RQ3: Is there a relationship between leadership and student achievement?

Utilizing the leadership survey, the data with respect to this research question are shown in Table 7. The correlation coefficient between leadership style and student achievement as measured by the 2009 CRCT results is .711, and the level of significance is .048. This is below the accepted level of .05 and therefore there is a significant relationship between these two variables.

Table 7

Correlations: Leadership Style with CRCT results and Benchmark Scores

		BMFALL	BMWIN	CRCT08	CRCT09	LEADSTYL
BMFALL	Pearson Correlation	1	.220	-.015	.269	.168
	Sig. (2-tailed)	.	.601	.972	.519	.691
	N	8	8	8	8	8
BMWIN	Pearson Correlation	.220	1	.438	.850	-.604
	Sig. (2-tailed)	.601	.	.278	.007	.113
	N	8	8	8	8	8
CRCT08	Pearson Correlation	-.015	.438	1	.446	-.621
	Sig. (2-tailed)	.972	.278	.	.267	.100
	N	8	8	8	8	8
CRCT09	Pearson Correlation	.269	.850	.446	1	-.711
	Sig. (2-tailed)	.519	.007	.267	.	.048
	N	8	8	8	8	8
LEADSTYL	Pearson Correlation	.168	-.604	-.621	-.711	1
	Sig. (2-tailed)	.691	.113	.100	.048	.
	N	8	8	8	8	20

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

RQ4: Is there a relationship between teacher instructional practices and student achievement?

Utilizing the teacher survey, the data with respect to this research question is shown in Table 8. The survey looked at different teacher practices. The correlation analyses between these practices are as follows:

1. The correlation coefficient between *peer influence* and student achievement as measured by the 2009 CRCT results is .6, and the level of significance is .1. This is above the accepted level of .05 and therefore there is no significant relationship between these two variables.
2. The correlation coefficient between *instruction skill math* and student achievement as measured by the 2009 CRCT results is .5, and the level of significance is .25. This is above the accepted level of .05 and therefore there is no significant relationship between these two variables.
3. The correlation coefficient between *parental involvement* and student achievement as measured by the 2009 CRCT results is .1, and the level of significance is .74. This is above the accepted level of .05 and therefore there is no significant relationship between these two variables.
4. The correlation coefficient between *instructional differentiation* and student achievement as measured by the 2009 CRCT results is .1, and the level of significance is .84. This is above the accepted level of .05 and therefore there is no significant relationship between these two variables.

Table 8

Correlations: Teacher Survey and CRCT 2009 Analysis (Posttreatment)

		PEERINF	INSSKMAT	PARINVOL	PROFDEV	INSTRDIF
PEERINF	Pearson Correlation	1	0.42	0.66	-0.3	0.19
	Sig. (2-tailed)	.	0.3	0.07	0.53	0.66
	N	8	8	8	8	8
INSSKMAT	Pearson Correlation	0.42	1	-0.02	-0.4	-0.1
	Sig. (2-tailed)	0.3	.	0.97	0.37	0.81
	N	8	8	8	8	8
PARINVOL	Pearson Correlation	0.66	-0.02	1	0.08	0.74
	Sig. (2-tailed)	0.07	0.97	.	0.84	0.04
	N	8	8	8	8	8
PROFDEV	Pearson Correlation	-0.26	-0.37	0.08	1	-0.1
	Sig. (2-tailed)	0.53	0.37	0.84	.	0.77
	N	8	8	8	8	8
INSTRDIF	Pearson Correlation	0.19	-0.1	0.74	-0.1	1
	Sig. (2-tailed)	0.66	0.81	0.04	0.77	.
	N	8	8	8	8	8
REVIEW	Pearson Correlation	0.55	0.14	0.76	-0.4	0.85
	Sig. (2-tailed)	0.16	0.75	0.03	0.28	0.01
	N	8	8	8	8	8
HANDSON	Pearson Correlation	-0.24	-0.38	0.52	0.22	0.71
	Sig. (2-tailed)	0.56	0.36	0.18	0.61	0.05
	N	8	8	8	8	8
HOTSINST	Pearson Correlation	0.42	0.1	0.78	-0.2	0.89
	Sig. (2-tailed)	0.3	0.81	0.02	0.64	0
	N	8	8	8	8	8

Table 8 (continued)

		PEERINF	INSSKMAT	PARINVOL	PROFDEV	INSTRDIF
USETIME	Pearson Correlation	0.24	-0.09	0.4	-0.1	0.43
	Sig. (2-tailed)	0.56	0.84	0.33	0.79	0.29
	N	8	8	8	8	8
ALIGNSTA	Pearson Correlation	0.07	0.05	0.39	-0.6	0.8
	Sig. (2-tailed)	0.87	0.92	0.34	0.14	0.02
	N	8	8	8	8	8
CRCT08	Pearson Correlation	-0.76	-0.05	-0.32	-0.1	0.27
	Sig. (2-tailed)	0.03	0.9	0.45	0.87	0.52
	N	8	8	8	8	8
CRCT09	Pearson Correlation	-0.63	-0.45	-0.14	0.77	-0.1
	Sig. (2-tailed)	0.1	0.26	0.74	0.03	0.84
	N	8	8	8	8	8
BMFALL	Pearson Correlation	-0.21	-0.69	0.14	0.32	-0
	Sig. (2-tailed)	0.62	0.06	0.75	0.45	0.95
	N	8	8	8	8	8
BMWIN	Pearson Correlation	-0.69	-0.32	-0.25	0.73	-0.2
	Sig. (2-tailed)	0.06	0.44	0.55	0.04	0.72
	N	8	8	8	8	8

		REVIEW	HANDSON	HOTSINST	USETIME	ALIGNSTA
PEERINF	Pearson Correlation	0.55	-0.2	0.42	0.24	0.1
	Sig. (2-tailed)	0.16	0.56	0.3	0.56	0.9
	N	8	8	8	8	8
INSSKMAT	Pearson Correlation	0.14	-0.4	0.1	-0.1	0
	Sig. (2-tailed)	0.75	0.36	0.81	0.84	0.9
	N	8	8	8	8	8

Table 8 (continued)

		REVIEW	HANDSON	HOTSINST	USETIME	ALIGNSTA
PARINVOL	Pearson Correlation	0.76	0.52	0.78	0.4	0.4
	Sig. (2-tailed)	0.03	0.18	0.02	0.33	0.3
	N	8	8	8	8	8
PROFDEV	Pearson Correlation	-0.4	0.22	-0.2	-0.1	-0.6
	Sig. (2-tailed)	0.28	0.61	0.64	0.79	0.1
	N	8	8	8	8	8
INSTRDIF	Pearson Correlation	0.85	0.71	0.89	0.43	0.8
	Sig. (2-tailed)	0.01	0.05	0	0.29	0
	N	8	8	8	8	8
REVIEW	Pearson Correlation	1	0.35	0.94	0.54	0.8
	Sig. (2-tailed)	.	0.4	0	0.17	0
	N	8	8	8	8	8
HANDSON	Pearson Correlation	0.35	1	0.48	0.12	0.5
	Sig. (2-tailed)	0.4	.	0.23	0.79	0.3
	N	8	8	8	8	8
HOTSINST	Pearson Correlation	0.94	0.48	1	0.67	0.8
	Sig. (2-tailed)	0	0.23	.	0.07	0
	N	8	8	8	8	8
USETIME	Pearson Correlation	0.54	0.12	0.67	1	0.6
	Sig. (2-tailed)	0.17	0.79	0.07	.	0.1
	N	8	8	8	8	8
ALIGNSTA	Pearson Correlation	0.83	0.46	0.81	0.57	1
	Sig. (2-tailed)	0.01	0.25	0.01	0.15	.
	N	8	8	8	8	8

Table 8 (continued)

		REVIEW	HANDSON	HOTSINST	USETIME	ALIGNSTA
CRCT08	Pearson Correlation	-0.1	0.52	0.05	0.02	0.4
	Sig. (2-tailed)	0.84	0.19	0.9	0.96	0.3
	N	8	8	8	8	8
CRCT09	Pearson Correlation	-0.5	0.42	-0.2	0.13	-0.3
	Sig. (2-tailed)	0.22	0.31	0.66	0.77	0.5
	N	8	8	8	8	8
BMFALL	Pearson Correlation	-0.2	0.49	-0.3	-0.4	-0.3
	Sig. (2-tailed)	0.55	0.22	0.47	0.28	0.5
	N	8	8	8	8	8
BMWIN	Pearson Correlation	-0.5	0.36	-0.2	-0.1	-0.3
	Sig. (2-tailed)	0.23	0.38	0.64	0.82	0.5
	N	8	8	8	8	8

		CRCT08	CRCT09	BMFALL	BMWIN
PEERINF	Pearson Correlation	-0.76	-0.6	-0.21	-0.69
	Sig. (2-tailed)	0.03	0.1	0.62	0.058
	N	8	8	8	8
INSSKMAT	Pearson Correlation	-0.05	-0.5	-0.69	-0.32
	Sig. (2-tailed)	0.9	0.26	0.06	0.439
	N	8	8	8	8
PARINVOL	Pearson Correlation	-0.32	-0.1	0.14	-0.25
	Sig. (2-tailed)	0.45	0.74	0.75	0.547
	N	8	8	8	8
PROFDEV	Pearson Correlation	-0.07	0.77	0.32	0.734
	Sig. (2-tailed)	0.87	0.03	0.45	0.038
	N	8	8	8	8

Table 8 (continued)

		CRCT08	CRCT09	BMFALL	BMWIN
INSTRDIF	Pearson Correlation	0.27	-0.1	-0.03	-0.15
	Sig. (2-tailed)	0.52	0.84	0.95	0.717
	N	8	8	8	8
REVIEW	Pearson Correlation	-0.09	-0.5	-0.25	-0.48
	Sig. (2-tailed)	0.84	0.22	0.55	0.233
	N	8	8	8	8
HANDSON	Pearson Correlation	0.52	0.42	0.49	0.358
	Sig. (2-tailed)	0.19	0.31	0.22	0.384
	N	8	8	8	8
HOTSINST	Pearson Correlation	0.05	-0.2	-0.3	-0.2
	Sig. (2-tailed)	0.9	0.66	0.47	0.64
	N	8	8	8	8
USETIME	Pearson Correlation	0.02	0.13	-0.44	-0.1
	Sig. (2-tailed)	0.96	0.77	0.28	0.816
	N	8	8	8	8
ALIGNSTA	Pearson Correlation	0.43	-0.3	-0.29	-0.27
	Sig. (2-tailed)	0.29	0.51	0.49	0.521
	N	8	8	8	8
CRCT08	Pearson Correlation	1	0.45	-0.05	0.441
	Sig. (2-tailed)	.	0.27	0.9	0.275
	N	8	8	8	8
CRCT09	Pearson Correlation	0.45	1	0.27	0.856
	Sig. (2-tailed)	0.27	.	0.53	0.007
	N	8	8	8	8

Table 8 (continued)

		CRCT08	CRCT09	BMFALL	BMWIN
BMFALL	Pearson Correlation	-0.05	0.27	1	0.224
	Sig. (2-tailed)	0.9	0.53	.	0.594
	N	8	8	8	8
BMWIN	Pearson Correlation	0.44	0.86	0.22	1
	Sig. (2-tailed)	0.28	0.01	0.59	.
	N	8	8	8	8

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

5. The correlation coefficient between *Review* and student achievement as measured by the 2009 CRCT results is .5, and the level of significance is .22. This is above the accepted level of .05 and therefore there is no significant relationship between these two variables.
6. The correlation coefficient between *hands-on learning* and student achievement as measured by the 2009 CRCT results is .42, and the level of significance is .31. This is above the accepted level of .05 and therefore there is no significant relationship between these two variables.
7. The correlation coefficient between *higher order thinking skills instruction* and student achievement as measured by the 2009 CRCT results is .2, and the level of significance is .66. This is above the accepted level of .05 and therefore there is no significant relationship between these two variables.

8. The correlation coefficient between *use of time* and student achievement as measured by the 2009 CRCT results is .13, and the level of significance is .77. This is above the accepted level of .05 and therefore there is no significant relationship between these two variables.
9. The correlation coefficient between *alignment to standards* and student achievement as measured by the 2009 CRCT results is .3, and the level of significance is .51. This is above the accepted level of .05 and therefore there is no significant relationship between these two variables.
10. The correlation coefficient between *professional development* and student achievement as measured by the 2009 CRCT results is .77, and the level of significance is .03. This is below the accepted level of .05 and therefore there is a significant relationship between these two variables. This is the only instructional practice variable that had a significant relationship. All other practices did not have a significant relationship with student achievement. Overall data shows that the variable instructional practice did not correlate significantly with student achievement.

RQ5: Is there a relationship between student efficacy and student achievement?

The data with respect to this research question are shown in Table 9. The correlation coefficient between student efficacy and student achievement as measured by the 2009 CRCT results is .087, and the level of significance is .124. This is above the accepted level of .05 and therefore there is no significant relationship between these two variables.

Table 9

Correlations: Self-Efficacy and CRCT 2009 (Posttreatment)

		bnch M/E	bnch M/E	CRCT_08	CRCT_09	STSELEFF
bnch M/E	Pearson Correlation	1	.221	.112	.245	-.031
	Sig. (2-tailed)	.	.002	.124	.001	.667
	N	191	191	191	191	190
bnch M/E	Pearson Correlation	.221	1	.430	.835	-.015
	Sig. (2-tailed)	.002	.	.000	.000	.832
	N	191	191	191	191	190
CRCT_08	Pearson Correlation	.112	.430	1	.414	-.044
	Sig. (2-tailed)	.124	.000	.	.000	.542
	N	191	191	191	191	190
CRCT_09	Pearson Correlation	.245	.835	.414	1	.124
	Sig. (2-tailed)	.001	.000	.000	.	.087
	N	191	191	191	191	190
STSELEFF	Pearson Correlation	-.031	-.015	-.044	.124	1
	Sig. (2-tailed)	.667	.832	.542	.087	.
	N	190	190	190	190	190

** Correlation is significant at the 0.01 level (2-tailed).

RQ6: Is there a relationship between parental involvement and student achievement?

The data with respect to this research question are shown in Table 8. The correlation coefficient between parent involvement and student achievement as measured by the 2009 CRCT results is .10, and the level of significance is .74. This is above the

accepted level of .05 and therefore there is no significant relationship between these two variables.

RQ7: Is there a relationship between professional development and student achievement?

The data with respect to this research question are shown in Table 8. The correlation coefficient between of professional development and student achievement as measured by the 2009 CRCT results is .77 and the level of significance is .03. This is below the accepted level of .05 and therefore there is a significant relationship between professional development and student achievement.

Summary

The Correlation Analysis showed significant relationships between dependent variable, student achievement and leadership, teacher professional development and the winter benchmark assessment that is administered annually as a predictor of performance on the Criterion Referenced Competency Test. Table 10 shows the Regression of variables correlated to the 2009 CRCT. The beta correlation coefficient between the winter benchmark and the 2009 CRCT is .856 with a level of significance of .007, indicating high significance. The regression showed that the only predictor of the 2009 CRCT in this set of variables is the winter benchmark. There were no significant relationships between language development, socioeconomic status, student efficacy, and parental involvement and student achievement.

Table10

Regression Results of CRCT 2009

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.856	.733	.688	8.224	.733	16.444	1	6	.007

a Predictors: (Constant), BMWIN

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig
1	(Constant)	33.381	12.008		2.780	.032
	BMWIN	.879	.217	.856	4.055	.007

a Dependent Variable: CRCT09

Excluded Variables

Model		Beat In	t	Sig.	Partial Correlation	Collinearity Statistics Tolerance
1	PEERINF	-.071	-.225	.831	-.100	.524
	INSSKMAT	-.196	-.861	.429	-.359	.897
	PARINVOL	.080	.339	.748	.150	.937
	PROFDEV	.310	.997	.364	.407	.461
	INSTRDIF	.046	.196	.852	.087	.976
	REVIEW	-.104	-.400	.705	-.176	.773
	HANDSON	.124	.514	.629	.224	.872

Table 10 (continued)

Model		Beat In	t	Sig.	Partial Correlation	Collinearity Statistics Tolerance
	HOTSINST	-.021	-.088	.933	-.040	.961
	USETIME	.213	1.004	.361	.410	.990
	ALIGNSTA	-.047	-.195	.853	-.087	.928
	CRCT08	.086	.338	.749	.149	.806
	BMFALL	.078	.332	.753	.147	.950

a Predictors in the Model: (Constant), BMWIN

b Dependent Variable: CRCT09

The analysis showed a significant relationship between professional development and student achievement which supports the assertions made by Ball and Cohen (1999), which indicated that teacher professional development significantly impacts student achievement. Additionally, the data showed a significant relationship between leadership and student achievement. These findings were in complete support of Getzal and Guba's (1957) assertion of leadership having significance with student outcomes as illustrated in their Social System Model. They asserted that the leader must ensure that roles and expectations are clearly defined while taking into consideration the needs of the individuals within organization. These needs include creating avenues for teacher input, being knowledgeable of instructional strategies and curriculum, monitoring and evaluating appropriately, and being able to resolve conflicts. The analyses contradict the assertions made by Hart and Risely (1995) (language development), Schweinle, Meyer

and Turner (2006) (student efficacy), and Driessen et al. (2004) (parental involvement) having significance with impacting student achievement. Although the analysis did not show direct significance between these variables and student achievement, it revealed that certain skills, knowledge, dispositions, and practices that are categorized under these variables had significant relationships with each other.

CHAPTER VI

SUMMARY AND RECOMMENDATIONS

Problem in Context

Student achievement in the area of mathematics was identified as an area of problem in Urban Academy and the greater Urban Public Schools District (UPS). The data from 2000 through 2008 on the spring Criterion Referenced Competency Tests consistently showed small student achievement gains in mathematics throughout the school system. Although some improvement was occurring, progression was slow. From elementary to high school, students performed at minimal levels in mathematics. A closer look at the UPS data revealed an overall drop in performance as students matriculated to the higher grade levels. The percentage of students meeting and exceeding grade level standards diminished as the grade level increased with few exceptions each year. The introduction of the new *Georgia Performance Standards* yielded further diminished achievement data on the Georgia Criterion Referenced Competency Test with failure being prevalent across the grades levels in the area of mathematics. The expectation of content mastery changed during this school year with students having less basic computation problems to solve and more problem solving based on conceptualization involving two and three steps, data analysis/reasoning, and strong command of language/vocabulary and appropriate math tools. It was with urgency

that variables at Urban Academy be investigated to determine what could be causing student failure in mathematics.

The review of literature suggested that student achievement in mathematics is influenced by such variables such as (a) Language development (Hart &Risely, 1995) and socially disadvantaged homes (Hess &Shipman, 1965); (b) Socioeconomic status (Natriello, Macdill, &Pallas, 1990), literacy experiences, exposure and knowledge a child comes to school with (Baker, Serpell, &Sonenshein, 1995) and connections to real life context (Friere, 1970); (c) School leadership and the relationship between the subordinates and manager within a social system (Getzal &Guba, 1968); (d) Instructional practices of teachers and how well they engage learners by adapting their teaching to different learning styles (Dunn &Dunn, 1979); Student efficacy , their attitudes and behaviors (Schweinle, Meyer, & Turner, 2006); (e) Parental involvement and improved home school relationships (Driessen et al., 2004) and using six avenues for involvement: parenting, communicating, volunteering, learning at home, decision making, and collaborating (Epstein, 1992, 2001); (f) Professional development and its impact on teacher methodology (Loucks-Horsley & Matsumoto, 1999).

It was proposed that the possible causal factors that may yield an outcome of low student achievement in math are prior language development, socioeconomic status, leadership, teacher methodology, student efficacy/engagement, professional development, and parental involvement. Student achievement in math may be impacted by students' understanding of the written and spoken language. Students that receive exposure to early language may out perform those who do not. Students may be better

able to understand and problem-solve when they have a full command of the language and understand what is being asked of them. Teachers who focus on building language skills, vocabulary development while providing instructional differentiation might be able improve student achievement in math. If children can manipulate concrete materials and are exposed to higher order thinking skills that allow for them to synthesize attained skills, they might be better able to understand more difficult math concepts. With better understanding, student confidence levels will increase in the area of mathematics thus leading to improved self efficacy and increased student engagement. Teachers that ensure that the skills being taught are aligned to the required curriculum, who instruct students based on their learning styles, who use multiple assessments, and who analyzes this data frequently to determine skill mastery and next steps for instructional implementation might improve the percentage of students meeting or exceeding on standardized tests. Administrators that include teachers in the decision making process for determining the possible causes of student failure increase the probability of teachers working toward finding solutions to implement for academic achievement improvement. Additionally, the leader's evaluative practices that focus on continued development (pedagogical) of the teacher may indirectly impact student achievement in a positive way. If students are provided with an instructional program that encompasses these specific strategies daily, improved academic achievement might result.

Instrumentation was used to gather information from parents, teachers and students. The information was used to examine if there was a relationship between student achievement in mathematics and the referenced variables: prior language

development, socioeconomic status, leadership, instructional practices, student efficacy, professional development, and parental involvement. A treatment was developed and implemented during the 2008-2009 school year (see Appendix A) based on the perceived impacting variables. The 2009 Criterion Referenced Competency Test was used as a posttest to determine if the treatment had a significant impact on student achievement. Additionally, a district wide benchmark assessment was administered during the months of September 2008 and February 2009 to monitor student achievement growth prior to the CRCT.

The total population of students surveyed was 100% African-American; 69% of the students were economically disadvantaged (based on free or reduced lunch status). The teacher population was 96% African-American and 4% Caucasian. The total population parents were African-American.

The sampling for the student and parents surveys consisted of the total population of third and fourth grade students and parents that agreed to participate. Total population of teachers was used for the leadership and teacher survey sampling.

Main Findings

Using the Statistical Package for the Social Sciences (SPSS), the analyses showed the Winter Benchmark Assessment to be a good indicator of student outcomes on the Criterion Referenced Competency Test (CRCT). The relationship level of significance between the CRCT and the Winter Benchmark Assessment was .007. Teacher instructional practices with respect to professional development (significance level of .03) and leadership within the building (significance level of .04) were significantly

correlated to student achievement. The other variables tested, Language development which was inclusive of exposure to literature (significance level of .13), homework support (significance level of .33), and parent's education level (significance level of .45), student efficacy (significance level of .087), and parental involvement (significance correlation coefficient of .74), were not significantly correlated to student achievement however, had significance among each other. The district winter benchmark used to monitor the progress of the treatment showed a significant relationship with the 2009 CRCT results.

Conclusion

In this study, the data retrieved from the instruments and correlation analysis indicate that the independent variables—leadership and teacher instructional practice of professional development—were significantly related to student achievement as defined by the Georgia Criterion Referenced Competency examination administered to third and fourth grades in the area of mathematics. The correlation analysis also revealed that the district winter benchmark had a significant relationship with student achievement.

The results suggest that the treatment practices that considered fine-tuning teacher instructional practices by providing professional development gives explanation as to why the treatment was successful. These practices include: building understanding of content subject matter, integrating literature with math to build vocabulary, developing questioning techniques, using assessment strategies (for and of learning), and implementing differentiation strategies that considers the exposure and experiences of students (inclusive of the use concrete materials and a student's background knowledge-

High Definition Planning (Persuad & Turner, 2007). All of the areas that the teachers were professionally developed in focused on the three significant variables. The results substantiate how purposeful professional development for teachers based on researched variable analysis positively impacts student achievement. Although schools cannot change the socioeconomic status of the population it serves, there are instructional practices that can be implemented that ensure a fair and equitable learning experience for all students.

Recommendations

The following recommendations are provided for classroom teachers, building administrators, and area executive directors.

Classroom Teacher

The classroom teacher should consider continuous growth professionally throughout the school year. This recommendation is based on the finding that professional development plays a significant role in student achievement. The classroom teacher should obtain a schedule of trainings offered and select those that are in direct relationships to improvement of instructional practices. Additionally, the classroom teacher should utilize a benchmark assessment that is closely related to the standardized test that will be given at the end of the year and use the results to inform their instructional next steps.

Building level school administrators

Building level school administrators should ensure the following:

- *Data Analysis*: It is imperative that the building level administrator make decisions regarding programs based on data analysis and researched based variables. There are several reform initiatives/models that give promise to be the answer to eliminating student failure. These programs do not consider the socioeconomic status of all learners. There should be other sources of data utilized as well outside of the state referenced test. This recommendation is based on the significant correlation between professional development and student achievement.
- *Purposeful Professional Development*: Based on the researched variables aforementioned, programs or treatments should be inclusive of professional development that gives teachers an opportunity to learn the new information and implement the methods. Teachers should be able to self evaluate as a built-in practice. Teachers should have the opportunity to determine strengths and weaknesses of their implementation of the new information. This recommendation is based on the significant correlation between professional development and student achievement.
- *Follow-Up Assessment and Feedback*: There should be an indicator used prior to standardized testing that allows teachers to determine if the implementation of strategies based on researched variables were effective.

The Executive Directors

The Area Executive Directors should allow for local school autonomy when it comes to the different populations served. From school to school the populations are

different, with different experiences and exposure. The "Cookie Cutter" concept of reform may not take these differences into account and may not positively impact student achievement if the possible variables that could be impacting the student failure at each specific school is not researched. These reform programs may indicate researched based but they are not specifically researched based for each school site's specific population.

Further Research

Future research is needed:

1. To replicate the study utilizing the independent variables in this study as dependent variables.
2. To replicate the study by observing teachers' methods discussed in the study in different socio-economic school settings.
3. To replicate the study experimentally by training teachers and administrators in high definition skills in other schools and school districts.

Summary

The problem in the context was identified as low student achievement language deficiency and other variables were cited in literature as possible causes. It was proposed to examine the extent to which prior language development, socioeconomic status, leadership, instructional practices/teacher methodology, student efficacy/engagement, professional development, and parental involvement impacted student achievement.

A study was conducted using instrumentation, correlation analysis, and treatment based on significant correlations. The total population of students surveyed was 100% African American. Sixty-nine percent of the students were economically disadvantaged

(based on free or reduced lunch status). The teacher population was 96% African American and 4% White. The total population parents were African American.

Surveys were distributed to teachers, students, and parents. The retrieval of the surveys ensured anonymity for all parties surveyed. Statistical Package for the Social Sciences (SPSS) was used to analyze the data in accordance with research questions. The analyses showed that teacher instructional practice of professional development and leadership were significantly correlated to student achievement. The other variables tested: socioeconomic status, language development which was inclusive of exposure to literature, homework support, and parent's education level, student efficacy, and parental involvement, were not significantly correlated to student achievement however they had significance among each other. The results of the 2009 CRCT correlated with the winter 2009 benchmark showed a significance relationship as well.

APPENDIX A

Explanation of Treatment

All third and fourth grade teachers at Urban Academy were told that the school had an opportunity to sample a math program. They were told that the program would not be purchased if teachers did not find the strategies and materials beneficial to their current practices. Teachers were informed that because this was an inquiry into a new program, not all teachers would be trained or receive materials. They were informed that those teachers trained in implementation of strategies would help to determine if the school would consider purchasing the program and training opportunity for all classroom teachers. The teachers were told that they were randomly selected however the researcher purposefully identified one novice and one veteran teacher on both grade levels for this experiment. Two teachers out of four on the fourth grade level and two teachers out of five on the third grade level received professional development in the content area of math over the course of four consecutive months.

The spring 2008 CRCT results served as a baseline for student performance level prior to the start of the treatment. The spring 2009 CRCT results served as the post results. A comparison between the two was used to show the instructional significance of the treatment.

Appendix A (continued)

During the month of September, surveys were distributed to students, parents, and teachers for perceptual and informational data. The data was used to show the significant relationship between specific variables and student achievement.

Professional Development-Instructional Practices

The training was a mesh of district directed professional development and researched meeting protocols. It emphasized five priorities. They were: building understanding of content subject matter, integrating literature with math to build vocabulary, developing questioning techniques, using assessment strategies (for and of learning), and implementing differentiation strategies (inclusive of the use concrete materials and a student's background knowledge).

1. *Building Understanding of Content Subject Matter* included an in-depth look at the required curriculum and determining exactly what students were supposed to learn and be able to do as a result of this knowledge. Teachers were taught how to appropriately aligned to State and local performance standards, use a backwards planning design to ensure that the creation of assessments were aligned to the standards and that the lesson activities were aligned to what would be assessed on.
2. *Integrating Literature with Math to Build Vocabulary and making deliberate, Real World Connections* included the use of books that focused on the math skills being taught. Teachers were taught how to make math connections through literature. They were shown how to introduce the different math

Appendix A (continued)

vocabulary terms associated with the book and transfer that same knowledge when introducing the new math skill. Teachers were taught how to help students bring meaning to the new skill based on their own experiences and knowledge base. Teachers were introduced to different ways on how to quickly assess students' prior knowledge and build lesson plan activities on what students already knew about the new skill. They learned to use KWL Charts (what students **K**now, what they **W**ant to know, and what they **L**earned).

3. *Developing Questioning Techniques*: Teachers were taught how to plan questions at high levels of complexity (upper levels of Bloom's Taxonomy). They were taught how to consider instructional goals and emphasize questions that reinforce them. They learned to develop questions that helped students see what concepts and ideas were important. They learned to model for students how to determine what the question was asking. They were trained to teach students how to ask clarifying questions. They were taught how to encourage students to defend/justify their response and require them to use reasoning skills and higher order thinking skills.
4. *Using Assessment Strategies-(for and of learning)* included training teachers on how to assess students while they were in the process of learning new information and assessing them after acquisition of skills to determine mastery of necessity of re-teaching or review. They learned how to provide feedback

Appendix A (continued)

to students that was credible and directly connected to student responses. They learned how to develop scoring criteria/rubrics that were clear and shared with students to help assess, monitor, and communicate learning expectations and accomplishments. They were trained on how to support students with using self-assessment to help them understand their learning and how it was aligned to the expectation.

5. *Implementing Differentiation Strategies* included the use of instructional activities designed to reach student needs by developing the lesson around the students' readiness, interests, and learning styles. They learned to review student data (using multiple assessments) and diagnose student performance to plan lessons that improved achievement. They were trained on how to develop and set up student centers/stations aligned to the standards allowing for different learning styles in the process of learning. They learned to develop multiple learning tasks aligned to standards that were scaffolded to the learning needs of students and how to include multiple learning opportunities (technology, oral presentation, written, text-based, art-based, etc.) for students to meet their needs and interests. They were trained on how to design lessons that called for a variety of products that students could choose from to demonstrate learning. They also received concrete materials to support students learning. They were trained on when and how to use these materials.

Appendix A (continued)

Professional Development—Meeting Protocols

The treatment group was also introduced to a meeting protocol, High Definition Planning (Persaud & Turner, 2007) that included: identifying the problem of student achievement, causal factors, selecting the most critical three of those factors, strategizing for solutions, determining responsible persons for implementing the solutions and determining a timeline for the intervention. Additionally, they met weekly for one hour collaborative sessions with their respective teammates (those not a part of the treatment as well as those involved in the treatment) and again with just those receiving professional development. Once per month during one of the treatment sessions, the teachers were able to view themselves in action and used the Observation Based Instructional Assessment (Persaud, 2007), an evaluation instrument used to determine frequency of use instructional practices indicated on the instrument. They were able to grade themselves and provide feedback and discussion regarding what they saw and next steps. This was done for three consecutive months.

Monitoring

The researcher attended weekly grade level collaborative planning sessions to monitor the following:

1. Use of the Hi-Definition Planning protocol
2. Ensure that planning sessions were focused and time maximized

Appendix A (continued)

3. Ensure that teachers used the OBIA correctly during video observing sessions to monitor if treatment teachers were influencing non-treatment teachers to use new practices as outline by exclusive professional development (validity of study)

The OBIA instrument was used by the observer as a pre and post treatment instrument to determine behavior change in teacher practice.

Post-Assessment

During the month of April 2009, the Criterion Referenced Competency Test was administered. Comparisons were made between the results of spring 2008 and spring 2009 scores.

APPENDIX B

Urban Academy Parent Survey

A. Education

1. My highest level of education is (check one)
   a. Junior High School
   b. High School
   c. BA or BS Degree
   d. Masters Degree
   e. Doctorate

Circle the number that applies

1=Never 2=A Few Times 3=Sometimes 4= Most Times 5=Always

B. *Socioeconomic Status* - refers to the average annual income of a household that qualify children from these homes for free and reduced lunch at school.					
2. My child qualifies for free or reduced lunch.	1	2	3	4	5
3. My child has attended the same school since age of enrollment.	1	2	3	4	5
4. I am able to assist my child with homework.	1	2	3	4	5
5. I am able to hire a tutor to assist my child when additional support is needed.	1	2	3	4	5
6. My child has a quiet place to do homework when he/she gets home from school.	1	2	3	4	5

C. *Student's Prior Language Development* - refers to a student's exposure to literature and language, having access to books, being read to, and conversed with prior to formal education years, the attendance to a high-quality preschool.					
7. My child attended a preschool program.	1	2	3	4	5
8. I read books to my child prior to formal schooling years.	1	2	3	4	5
9. My child has a library of books at home.	1	2	3	4	5
10. My child enjoys being read to.	1	2	3	4	5
11. My child enjoys reading independently.	1	2	3	4	5

APPENDIX C

Student Survey

Math: Do You Like It, Love It, or Want to Leave It?

This is a survey that will help me to know how comfortable you are with mathematics. Answer each question by indicating a rating from 1-5. 1 indicates the lowest and 5 indicates the highest. You may only circle one response per question.

1 - Never 2 - A Few Times 3 - Sometimes 4 - Most times 5 - Always

1. I like to do math.	1	2	3	4	5
2. I find math fun.	1	2	3	4	5
3. Math is difficult for me.	1	2	3	4	5
4. I help my friends with math.	1	2	3	4	5
5. My friends help me with my math.	1	2	3	4	5
6. My teacher makes math fun.	1	2	3	4	5
7. My teacher is good at math.	1	2	3	4	5
8. My parents help me with my math.	1	2	3	4	5
9. My parents are good at math.	1	2	3	4	5
10. I like playing math games.	1	2	3	4	5

APPENDIX D

Urban Academy Teacher Survey

1=Never *2=A Few Times* *3=Sometimes* *4= Most Times* *5=Always*

A.	*Peer Influence* - research affirms that students learn a faster rate when they are being taught by a child that is their own age.					
1	I allow students to work in pairs.	1	2	3	4	5
2.	I believe that cooperate learning is beneficial to student learning.	1	2	3	4	5
3.	I organize my desks in the classroom to allow for student collaboration and cooperation.	1	2	3	4	5
4.	I allow some of the higher performing students to assist the low performing students with math.	1	2	3	4	5
5.	I design lessons that require students to work in teams.	1	2	3	4	5

B.	*Parental Support* refers to parental support for teachers with ensuring that homework is completed and that students receive the necessary daily practice.					
6.	I require parents to sign off on all homework assignments.	1	2	3	4	5
7.	I encourage parents to assist in the classroom at least once per month.	1	2	3	4	5
8.	I ask parents to give daily/monthly/quarterly feedback on their child's learning.	1	2	3	4	5
9.	I arrange parent conferences at least once per quarter.	1	2	3	4	5
10.	I send progress reports home weekly/bi-weekly/monthly.	1	2	3	4	5

C.	*Teacher Experience* - refers to the years of teaching experience, skill/content knowledge, and instructional methodology of a teacher.					
11.	My Lessons are characterized by a variety of student grouping strategies.	1	2	3	4	5
12.	I use a variety of ways to teach the same skill	1	2	3	4	5
13.	I model what students are to know and be able to do and apply what it taught to *real-life* situations.	1	2	3	4	5
14.	I have taught math for more than three years.	1	2	3	4	5
15.	Math was my favorite subject in school	1	2	3	4	5

Appendix D (continued)

D.	*Professional Development* - refers to the training for the attainment of the necessary knowledge base that teachers need in order to implement instructional best practices that impact student achievement.					
16.	I attend courses in math outside of what is offered at my school.	1	2	3	4	5
17.	I am enrolled in a math endorsement certification class.	1	2	3	4	5
18.	I collaborate with my colleagues to get good ideas for teaching math.	1	2	3	4	5
19.	I visit classrooms to observe other teachers teaching math.	1	2	3	4	5
20.	I have a math endorsement certificate.	1	2	3	4	5

E.	*Instructional Differentiation* - refers to instructional practices that positively impact student achievement in mathematics by enabling students to learn required skills in methodical ways based on how they learn. Teaching strategies that include a variety of creative, imaginative learning options provide students with a greater range for possible success (Daz-lefebvre, 2004).					
21.	I take into consideration the different learning styles	1	2	3	4	5
22.	My lesson plans show a variety of teaching strategies for the same objective.	1	2	3	4	5
23.	I use flexible grouping (small group, one-on-one) in the classroom.	1	2	3	4	5
24.	Students are allowed to create different work products to show mastery of the same skill/objective.	1	2	3	4	5
25.	My homework and follow-up assignments are differentiated to meet the varying needs and strengths of the students	1	2	3	4	5

F.	*Skill Review and Repetition* refers to the availability of practice and review opportunities that allow students to go over previously taught skills and transfer their knowledge when they have gained automatic recall.					
26.	I review students' understanding of a previous lesson to make connections to current instruction.	1	2	3	4	5
27.	I offer opportunities for students to review skills that I have taught on an on-going basis	1	2	3	4	5
28.	Before moving on to the next skill, I have students practice taught skills through homework.	1	2	3	4	5
29.	I give my students independent assignments that require them to use previously taught skills.	1	2	3	4	5
30.	Re-teaching activities are provided for students who need additional instruction (*didn't get it the first time*).	1	2	3	4	5

Appendix D (continued)

G. *Hands On Learning refers to* opportunities of learning that allows for students to manipulate concrete materials while learning abstract concepts. Students use materials to visually see patterns and relationships.					
31. The variety of learning activities/teaching strategies I use reflects my understanding of students' needs, strengths, special interests learning styles, and required learning time.	1	2	3	4	5
32. I use concrete materials when introducing a new math skill to students.	1	2	3	4	5
33. I allow students to work cooperatively when manipulating materials.	1	2	3	4	5
34. I allow students to have choice of materials they want to use when figuring out math problems.	1	2	3	4	5
35. Students are allowed to show their work using materials, drawings, oral presentation.	1	2	3	4	5

H. *Higher Order Thinking Skills* refers to questioning and projects that provide students the opportunity to become efficient at abstract thinking because they can better master the abstract concepts that are presented in mathematics.					
36. My students are required to respond to questions at levels of thinking beyond simple recall.	1	2	3	4	5
37. My questions go beyond simple recall and require students to think, synthesize, evaluate, and conclude.	1	2	3	4	5
38. My Students are required to explain their responses/answers	1	2	3	4	5
39. Independent activities, research assignment station/center/computer tasks, are available for students if they completed assignments before other students.	1	2	3	4	5
40. Skills, concepts, and content were taught at the appropriate levels of complexity in my class.	1	2	3	4	5

I. *Effective use of time* refers to teacher maximum use of time during the instructional day by effective planning and preparation.					
41. I have all materials, supplies, and equipment were ready prior to the beginning of the lesson	1	2	3	4	5
42. I am able to complete my lesson according to plan	1	2	3	4	5
43. I include timeframes for each portion of my lesson plan	1	2	3	4	5
44. I create lessons that are engaging for students	1	2	3	4	5
45. I work from a lesson plan.	1	2	3	4	5

Appendix D (continued)

J. *Alignment to State Required Curriculum Standards* refers to students receiving instruction that is aligned to the state standards.					
46. I develop a scope and sequence of state standards prior to planning my lesson.	1	2	3	4	5
47. My lesson plans are aligned to state Georgia Performance Standards and Quality Core Curriculum	1	2	3	4	5
48. My assessments are developed from the required curriculum.	1	2	3	4	5
49. My assessments inform my next steps for instruction.	1	2	3	4	5
50. I alter my lesson plans to review what I have taught when students do not do well on tests.	1	2	3	4	5

APPENDIX E

Leadership Survey

Select 1-5 to indicate the leadership qualities of your principal.

1=Never 2=A Few Times 3=Sometimes 4= Most Times 5=Always

My Principal

1. Effectively communicates the school's achievement plan to teachers and stakeholders.	1	2	3	4	5
2. Provides the leadership and vision necessary to create an atmosphere conducive to student learning.	1	2	3	4	5
3. Provides a process for monitoring, evaluating, and revising the school's vision, mission, and school plan.	1	2	3	4	5
4. Provides opportunities for teachers to have input in the school's instructional and operational structures.	1	2	3	4	5
5. Is knowledgeable of the curriculum.	1	2	3	4	5
6. Is knowledgeable of instructional strategies.	1	2	3	4	5
7. Fosters a school climate that encourages learning for students.	1	2	3	4	5
8. Ensures a safe environment for learning by implementing an effective school-wide behavior management plan.	1	2	3	4	5
9. Treats people fairly, equitably, with dignity, and respect using a personal and professional code of ethics.	1	2	3	4	5
10. Applies procedures and laws fairly, wisely, and considerately.	1	2	3	4	5
11. Models effective conflict resolution skills.	1	2	3	4	5

12. Please check the appropriate line to indicate your years of experience.

    a. 0-3 years _____ b. 4-10 years _____
    c. 11-20 years _____ d. 21-30 years _____
    e. 30+ years _____

13. Out of all of the core subjects that I have to teach, I am comfortable teaching:

    a. Reading _____ b. Social Studies _____
    c. Math _____ d. Health _____
    e. Science _____

Appendix E (continued)

14. My highest level of college is:

a. Bachelors _____ b. Masters _____
c. Specialist _____ d. Doctoral _____

15. I have been trained in the following:

a. Move it Math _____
b. Every Day Counts _____
c. Mountain Math _____
d. Math Initiative 2007 _____

APPENDIX F

Observation Based Instructional Assessment (OBIA) System

Teacher ID/Num: Dept/Grade Level: Subject Area: Date:

	Teacher and Students' Task Areas	Lower order thinking skills (teacher-student): Recall Knowledge, Paraphrasing literal meanings	Higher Order Thinking Skills: Teacher and students: Application, Analysis, Synthesis, Evaluation
1-2	A. Procedural Communication: Explains, Asks questions, uses answers	0 1 2 3 4 5	0 1 2 3 4 5
3-4	B. Uses student social experiences: Explains using students' experiences, Asks questions on students' experiences. Uses answers to reconstruct text ideas	0 1 2 3 4 5	0 1 2 3 4 5
5-6	C. Uses curriculum content: Explains text Asks questions on text Uses students' answers to textbook	0 1 2 3 4 5	0 1 2 3 4 5
7-8	D. Relates concepts to previous lessons-in same subject area Explains, asks questions and uses answers to link current lesson to previous	0 1 2 3 4 5	0 1 2 3 4 5
9-10	E. Relates concepts to different subject areas (integration) Explains, asks question and uses answers to link current lesson to different subjects' concepts	0 1 2 3 4 5	0 1 2 3 4 5
11-12	F. Demonstrates test concepts: Uses questions to identify meanings to be tested, seeks opinions about answers, explains different possibilities (incremental linking to testing)	0 1 2 3 4 5	0 1 2 3 4 5
13-14	G. Behavior Management (Positive): Uses criticisms, etc. to control (0); Uses eye contact, proximity, dialogue: (1-5) to manage	0 1 2 3 4 5	0 1 2 3 4 5

Ganga Persaud (2007) revised from Persaud 1993 Observation-based instructional assessment

Lower order thinking skills: knowledge-Recall of facts, Comprehension=literal meanings, paraphrasing
Higher order thinking skills: Application (principles applied in different situations), analysis (develops principles and inter-linkages) synthesis (develops new ideas, inferences, principles), evaluation (makes judgments about values between two or more ideas or facts).
Dispositions:= Character education embedded in lesson: honest, right and wrong, tolerance, justice-equity.

15. Technology: Overhead, Power-point: No__: Yes __:
16. Role-play/groups, hands-on: No__; Yes__;
17. Class Size: Below 20; 21-23; 24-27; 28-31; 31+;
18. Subject Area: 1. math __: 2. Science __ 3. Reading/Language __; 4. Social Studies: __; 5. Other __:
19. Class ability: Low __; Middle __; High __;
20. Free Lunch-Percent a. 0-25%, b. 26-50%, c. 51-75%, d. 76-100%

APPENDIX G

Regression Results of CRCT 2008

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of The Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.764	.584	.515	17.106	.584	8.422	1	6	.027

a Predictors: (Constant), PEERINF

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig
1	(Constant)	395.873	111.073		3.564	.012
	PEERINF	-15.797	5.443	-.764	-2.902	.027

a Dependent Variable: CRCT08

Excluded Variables

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics Tolerance
1	INSSKMAT	.329	1.163	.297	.462	.821
	PARINVOL	.342	.965	.379	.396	.560
	PROFDEV	-.290	-1.077	.331	-.434	.932
	INSTRDIF	.426	1.909	.114	.649	.966

Appendix G (continued)

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics Tolerance
	REVIEW	.483	1.786	.134	.624	.694
	HANDSON	.356	1.420	.215	.536	.941
	HOTSINST	.453	1.851	.123	.638	.825
	USETIME	.218	.774	.474	.327	.941
	ALIGNSTA	.480	2.475	.056	.742	.995
	CRCT09	-.055	-.149	.887	-.066	.606
	BMFALL	-.223	-.802	.459	-.337	.956
	BMWIN	-.165	-.422	.691	-.185	.524

a Predictors in the Model: (Constant), PEERINF

b Dependent Variable: CRCT08

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